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THE BOSTON MEETING OF THE EDUCATION SECTION OF THE AMERICAN HOME ECONOMICS ASSOCIATION.

The Boston meeting of this section was called to order by Miss Helen Kinne, Chairman, at the Massachusetts Institute of Technology, at 2 p.m., Tuesday, July 5, 1910, with about 275 in attendance.

In her introductory remarks Miss Kinne spoke of the pleasure felt by all in having the president of the Association, Mrs. E. H. Richards, in attendance. She then announced as the subject of the meeting, the methods of teaching, stating that this was perhaps the first occasion on which members had limited themselves to this topic, and also the first opportunity for deliberate discussion of the "special method" in a given lesson. This subject had been decided upon because of the wide-spread demand for it. "What we want is to see how the great principles of teaching apply in our work, for teaching to be alive must grow"

The following address of welcome was then given by Mrs. Richards:

Twenty-five years of endeavor to secure a hearing and a place in the curriculum for household arts have just been completed. Special schools, special teachers have been working to accomplish this, with what success may be judged by the following prospectus, recently issued:

"Domestic Science: A Course of Lessons for Elementary Schools.

"This book, prepared to meet the needs of a course in domestic science, can be read and studied with profit in every household. The author has been careful

AS SHOWN AT THE MINNESOTA CONSERVATION CONGRESS

to make the lessons suitable for public, private and rural schools. Teachers with absolutely no knowledge of domestic science can teach the lessons by reading them over carefully and performing the work as directed.

"The lessons consist of two years' work, fifty-eight lessons in all. The author has herself taught all of the lessons contained in the book, and the work, as a whole, embodies results obtained through several years of successful experience.

"Domestic science in elementary schools should not require an expensive apparatus, and thus create a wrong impression among parents and operate to the disadvantage of the work. The money often spent on the salary of a special teacher of cooking will equip a school shop and a school kitchen, and with the full directions given in this book there is no more reason why there should be a special teacher in domestic science in the elementary school than in any other subject."

When a subject becomes so fixed that it may be embodied in print it is an accepted fact. Perhaps we should now sit back with folded hands—*but* is the work done? Could a living, growing science ever be so crystallized as to dispense with the living, growing teacher who is not afraid to say she was mistaken or that her science of yesterday has been superseded by the discovery of today. We had just learned to sweep when the vacuum cleaner made it unnecessary.

It is true that the leaders have been struggling to express they knew not what. The early movements were due to philanthropists who saw the effects of ignorance but not the causes. Most vigorous efforts have been made to teach the knowledge of past generations to the coming one but these have not produced results commensurate with the effort because of rapidly changing conditions. School and settlement methods have been largely of this nature. A dim feeling of their futility has kept the leading educators on the defensive until now.

Through various agencies here a little and there a little, the science applications are beginning to be recognized. At last it is seen that in a scientific age the daily life of the people may be improved by appropriation of invention and discovery—but the movement is even yet in a plastic state.

No set rules can be laid down, no hard and fast lines drawn. With the very new movement of first year science domestic economy must ally itself. It should contribute freely to the subject matter to be considered. For that more research is demanded, more exact illustrations of scientific application furnished, gathered from the actual doing ***untrammeled by past tradition***. We cannot repeat that too often. The very essence of science is plasticity, quick adaptation to new theories, the progress in arts due to adoption of the most efficient processes even

if it means discarding the heirlooms of the past. The home and the household have been the fortress of tradition and stability—shall we risk levelling these walls? The fear that the mellow fruit of centuries will be sacrificed is what has held back the hand of the iconoclast. What would happen if home life became scientific? The results of the close shutting down of the hatches has been the breeding of festering discontent, the escape by illegitimate ways until even the most conservative have grudgingly yielded the point. If home life is to be saved, if the old time virtues are to be perpetuated, new forms must be found suitable for the time. Furthermore, all but the most bigoted recognize that the school of today must furnish the home of tomorrow with its weapons of defense. But the school of today must be in line with the scientific spirit of today, ever searching for the *better* way, ever trying the newest suggestion but discarding as quickly that which is not proving itself.

For the next few years therefore let us not crystallize our work or our plans into unalterable forms, but keep ever ready to take the next step, whether it be forward or to one side. No mountain peak is ascended straight up. Up hill and down hill the path leads before the top is reached. The right solution of the problem of keeping a happy, healthy home will come at last.

A paper was then presented by Miss Emma S. Jacobs of Washington, D. C., on A Practical Method of Teaching Household Arts in the Elementary Schools. Miss Jacobs took for an example the making of a fire, using a little glass model of a stove to make it quite clear. A paper on The Teaching of Household Furnishing and Decoration by Mrs. Mary E. Williams of New York City, was read by Miss Agnes Daley. The paper was accompanied by a most interesting exhibit. Miss Ednah A. Rich of California discussed How to make the Household Arts Effective in School and Community. These three papers may be found on subsequent pages of the JOURNAL.

Papers followed on The Improvement of the Public Health through Teaching of Hygiene in the Elementary School, by Miss Frances Stearn of Boston, one by Mrs. Ethel Fifield Brooks of New York City entitled A Lesson in House Construction, one by Mrs. Alice P. Norton and Miss Jessie P. Rich entitled A Lesson in Cookery in the Elementary School, and one on Our Penny Lunch Problem and How we Solve it, by Miss Emeline E. Torrey. Mr. E. C. Bishop, state superintendent of education of Nebraska then said a few words as to

how "they interested the boys in agriculture through corn raising and the girls in the use of corn products through corn cake," thereby making tremendous strides in interesting the children of the whole state.

A second meeting of the section was held on the following afternoon, in two sections, Mrs. Richards presiding over Section A, Textiles, and Miss Kinne over Section B, Foods and Sanitation. An over-flow meeting of Section B, at which the papers of that Section were repeated was also necessary, Miss Emma Jacobs presiding at this meeting. About 400 were in attendance at the various meetings.

In Section A the papers were as follows: Economy of Time in Technical Work, by Mrs. Blanche Hyde of Newton, Mass.; A Lesson in Dressmaking, by Miss Annie L. Bennett of the Practical Arts High School, Boston; The Teaching of Millinery, by Miss Clara S. Gay, of the same school; and the Teaching of Design to Trade Classes, by Miss Grace W. Ripley, of the Girls Trade School, Boston. These papers are printed elsewhere in this issue.

In Section B the following papers were presented: How to Apply Laboratory Methods to the Study of Practical Cooking, by Miss Carlotta C. Greer, Cleveland Technical School; How to Teach the Preparation of Meals, by Miss Florence Willard of New York City; How to Use the 100—Caloric Portion in Dietary Teaching, by Miss Mabel Wellman of Chicago; Subject Matter in a Course on Foods for College Entrance, by Miss Lillie C. Smith, of Brookline, Mass.; and Methods in Housewifery, by Miss S. Maria Elliott, of Simmons College (reprinted in this issue). Mr. Hollis Godfrey also said a few words on Motherhood and the City, as studied and treated by the Garland School.

A resolution of approval was passed by the meeting on efforts looking toward the articulation of high school and college work. After some discussion as to the point valuation for the household arts work the meeting adjourned about 4 p.m.

The following resolution was submitted for action:

(1) *Whereas*, the American Home Economics Association strongly feels the necessity for extending and intensifying the courses in household science and art in our high schools, and,

(2) *Whereas*, thorough instruction in such courses would require more time from the students than can be given to electives, by girls taking courses preparatory to college, and,

(3) *Whereas*, we believe that most girls of the high school will derive more value from household science and art, free-hand design, or household chemistry,

than from the compulsory study of two foreign languages in addition to English,

Be it therefore *resolved*, that it is the belief of the educational section of the American Home Economics Association that the colleges would advance the interests of our girls by the modification of their entrance requirements so as to require only one foreign language for admission, and to credit the following subjects:

Household Science and Art	2 units.
Household Chemistry	1 unit.
Free-hand Drawing	½ to 1 unit.
Music	1 unit.

An exhibit of illustrative material relative to the papers given formed an interesting feature of the meetings.

A very enjoyable occasion was the School Garden Luncheon given to Hon. W. M. Hays, Assistant Secretary of the U. S. Department of Agriculture, by the National Society for the Promotion of Agricultural Education and by the American Home Economics Association.

Contributions were received from school gardens literally from Maine to California. South Carolina, Texas, and Oklahoma vied with Massachusetts and Pennsylvania in fruits and flowers.

The additions to the lettuce, peas, potatoes, radishes, etc. were prepared at the Laboratory Kitchen and other sanitary eating places. The work of preparation was in charge of Miss Anna Barrows and Miss E. E. Shaw of the *School Garden Magazine* aided by an efficient corps of workers, including Miss Frances Stern of the Louisa Alcott Club, Mrs. Anna Gilchrist, Mrs. Bertha June Lucas, Mrs. Chas. A. French and several others.

Domestic science students served the lunch, speeches were made, and the 75 guests voted the luncheon a great success.

During the week about 175 persons registered at the Association headquarters, and 19 new members were enrolled.

DOMESTIC ART AS DISCUSSED AT THE RECENT MEETINGS OF THE HOUSEHOLD ARTS SECTION OF THE NATIONAL EDUCATION ASSOCIATION.

ANNA M. COOLEY.

Teachers' College, Columbia University.

Domestic art as a part of household arts has been somewhat slower in its development than the so-called domestic science subjects. This has been largely because its subject matter has been rather intangible and unclassified and because people have undertaken to present the subject who have known little about the technique and have had little appreciation of the thought content of the subject.

The importance of this field of household arts, especially in relation to future vocational development in various types of secondary schools, was realized and discussed at the recent household arts meetings of the National Education Association. The papers read were interesting and thought arousing and drew attention to the fact that in order to accomplish definite, lasting results of utilitarian value in this field attention must be given to a more logical and systematic method of presenting the subjects.

It is not sufficient to teach the girl to draft one shirtwaist or make one hat or dress; she should be taught these operations in such a way that she may realize the reasons for the various steps and processes. While this method is perhaps a trifle slower, it fully repays because of the greater gain in the long run, for the girl will be able to devise, to create, to work with initiative; there is less danger of exploiting her and she obtains correct ideas more easily with less expenditure of energy and with greater economy of time. This fact is clearly emphasized in the following papers by Miss Wilmot and Miss Bennett.

Miss Wilmot would have the girl gain a clear idea of the reasons why certain lines are necessary in making a pattern, and before any drafting is attempted would develop in a logical and systematic way the relation of these lines to the human figure. The girl is thus made able to see the reasons for the lines of the draft and not only accom-

plishes it with ease but is able to change and readjust it to suit the variations of the human form or to adapt it to the current style. In other words, she becomes a thinking individual instead of an automaton.

Miss Bennett also emphasizes the point of training the girl and developing originality and creative power. The lessons in millinery and in design as adapted to trade teaching of which she speaks show the necessity of keeping in mind the particular type of school and of so adapting work to it as to obtain the best results.

The papers read more especially concerned domestic art in different types of secondary schools—the trade, technical and practical arts high schools. The questions of subject matter and method for each of these types suggest a great field for discussion in later numbers of the JOURNAL. Perhaps a few general suggestions in relation to methods and devices for class-room management in domestic art may serve as an introduction to this field of thought and lead later to a discussion of more definite problems and devices for specific lines of work.

During the past few years, students of general pedagogy and practice have been turning their attention to the instruction and class-room management by teachers of special subjects. Perhaps none have been more severely criticised than the instructors of household arts. When one analyzes the cause for this criticism it seems to be due principally to the unsystematic handling of materials and the great lack of economy of time in relation to presentation of lessons. The teacher of sewing or dressmaking should guard against these dangers, for her subjects offer excellent opportunity for the pupils to "dawdle." For instance, a high school pupil of average ability should be able to make a simple shirtwaist in twelve hours. If, as sometimes happens, twenty-five are spent on this single garment, something is radically wrong in class-room management and practice.

"A place for everything and everything in its place," is a very good general rule with which to start. The workbags or boxes of the children should be carefully labelled and if possible kept in a conveniently located place. Extra supplies and materials should be so classified and labelled that they may be found with ease. A system of noting when supplies are low will guard against a general skirmishing about at the eleventh hour for a particular kind of machine needle or a certain number of thread and the consequent loss of time involved.

If the teacher has a special room for her work, she should have the

supplies most often used and such materials as she may need for demonstration conveniently at hand. If as supervisor she must travel from room to room in the school, a box for her use may be kept in each room, or one supplied with the few things she is most likely to need carried from class to class. A piece of coarse scrim (18 x 36 in.), or even unbleached muslin, with a large carpet needle and a ball of red Germantown yarn will be found an indispensable addition to this box for the quick demonstration of the method of making stitches. This cloth may be mounted in frames for such purposes or easily adjusted with thumb tacks to the wooden frame of a wall map and the height thus regulated for the use of the children as well as the teacher. In demonstrating on this cloth, the stitches should be very large so that the children at the back of the room may have no difficulty in seeing. Class demonstrations in dressmaking and millinery are great time-savers. With this help the teacher is spared the necessity of giving so much individual attention later and time is thus gained for other work.

In the presentation of lessons there are several points which, if kept in mind in planning work, will conduce to economy of time.

(1) A general outline of the entire series of lessons on a particular subject such as shirtwaists or nightdresses, if prepared before starting that subject, will keep before the teacher the subject matter which she wishes to introduce during that course of lessons. This aids her in proportioning her work carefully as she proceeds, and if supplementary discussions are to be introduced these may be so fitted into the general scheme as to produce the best results and with less danger of being entirely omitted.

(2) Some kind of plan for the lesson of the day is a necessity and a time-saver. It should be carefully prepared. Young teachers will find this worth while and a great aid in self-criticism of work.

(3) The aim of the lesson of the hour should be clearly and definitely stated so that each pupil may know how to proceed and what she is expected to accomplish.

(4) The questions asked during the presentation of the lesson should be clear, definite, logical, and thought arousing.

(5) The lesson should be well illustrated by means of the demonstration cloth, blackboard and finished articles of work, as well as by verbal descriptions and illustrations. It is wise to use as many methods as possible in illustrating, for this, too, will save time later.

(6) The teacher should be sure that the subject matter is adapted

to the particular class. Time is often wasted by presenting material for which the class is not yet prepared.

(7) Opportunity should be given in every lesson for the pupils to express themselves but the teacher should guard against digression. Needless talking and wandering from the subject of the day consumes valuable time.

(8) After the presentation of the lesson of the day, the work-boxes and materials may be distributed. Much time and trouble are saved if this distribution takes place after such presentation rather than before, as the pupils will then have their attention centered on the teacher and the lesson and not on the work in the boxes. Some systematic method of distribution should be devised as a time-saver. In a class-room with rows of desks this may be done by having a helper for each row, or in a special room the distribution may fall to two or three pupils.

Where equipment is limited, time is often wasted because of poor management. This is especially true in classes where cutting and machine work must be done in limited space and with few tables and machines. A teacher can so plan her lessons that a certain proportion of the class is perhaps basting or gathering while others are using the machines. In the same way the tables for cutting may be used by some while others are writing up notes, preparing ruffles, etc., until the time comes for exchanging places.

Much time is wasted by needless pinning preparatory to cutting. If the pinning of patterns in place and the quick method of cutting are demonstrated by the teacher, there will be a great saving of time. Children and older pupils often "putter" because of the lack of a clear mental picture of how to proceed quickly.

In many classes a needless amount of basting is demanded, especially in the making of simple underwear. In many cases if the long straight breadths are pinned carefully, basting is unnecessary and stitching can be begun at once. This does not necessarily mean poor work; a certain amount of skill should be developed.

Pupils should not be permitted to remain idle after they have accomplished the work of the day; the teacher should provide extra problems for those who work rapidly.

A bulletin board may assist in saving time and be made of great value in the special sewing room. This can be kept in order by the pupils. On this board topics of the day of interest to the class, pictures, etc., may be posted and if of sufficient worth, these may be filed and used for future reference.

The suggestions for economy of time in relation to sewing are practicable also in millinery and embroidery classes.

As a stitch in time saves time, so foresight on the part of the teacher of domestic art, as regards material and planning of work saves the time and energy which is otherwise dissipated through the necessity for much individual attention.

SUGGESTIONS FOR TEACHING DRAFTING IN THE FIRST OR SECOND YEAR OF THE HIGH SCHOOL.

RUTH A. WILMOT.

Instructor of Dressmaking, Pratt Institute.

There has been a great deal said by domestic art teachers both for and against the teaching of drafting in the high school.

It has been argued that there are patterns in the market sold at such a low price that it is a waste of time to draft, especially so as students after leaving schools will be more likely to buy than to draft the patterns which they need. It is also argued that drafting is too complicated to be really understood by high school students, and that it takes up too much time in a course where every minute must be made to count for the most possible. If the teaching of drafting is to be mere dictation and the result to be only a pattern, these are arguments of great weight; but if drafting means not only the production of a pattern, but also a thorough understanding of the construction of patterns, the relation of the lines of a pattern to the lines of the figure, and the relation of measures to the construction of a pattern and a garment, then the question is more doubtful.

Drafting, then, may mean the merely mechanical production of a pattern, or it may mean a great deal more. The amount of good which the students are to gain from an exercise in drafting depends largely upon the methods the teacher uses in presenting the draft.

Let us take for example the shirtwaist draft and see how it can best be presented. I choose the shirtwaist draft for it can be made to answer the purpose of corsetcover, chemise, amd nightgown patterns. The teacher should show the students the marking off in chalk on a bust form of the principal lines of a waist pattern, waist line, neck line, center front and center back, etc. In each new step the students should take the corresponding measures on each other. Each step should be accompanied by discussion and explanation, such, for instance, as that the shoulder seam if just on top of the shoulder makes a person appear round shouldered, or that the placing of the under arm seam slightly toward the back makes the waist look slender, etc.

When, one by one, these steps have all been taken the first essential in fitting, the proper placing of the lines and seams, is learned.

Then comes the rough modeling on the form in cambric or tissue paper. This cambric pattern laid on the table familiarizes the student with the appearance of the draft.

The teacher is now ready to take up the draft itself. It will be of great assistance to her if she will make beforehand a model of red cambric on which is laid in white cambric the pattern as it is placed in the draft with the construction lines ruled in heavy black with a wax pencil. The teacher can refer to this as each line of the draft is put in so that the students may follow the process.

With this amount of preparation, the draft may be given by dictation, for the student by this time should have such a clear idea of what she is working toward that she will be able to follow intelligently the instructions of the teacher.

The teacher should draft on the board with the students as she gives dictation. It will be found of great help in so doing for her to put in the construction lines of the draft with white chalk and the pattern lines with red. This causes less confusion as it makes the pattern stand out plainly from the construction lines.

In this way drafting becomes much more than a mere mechanical process which has no value or meaning beyond the production of a pattern. The students should have as a result of this work a clear knowledge (1) of the relation of lines to the figure; (2) the proper method of taking measures and the relation of these measures to a pattern; (3) the place where the lines of a shirtwaist should fall; and (4) the grain of the material on which a shirtwaist should be cut. They will also have had practice in fitting and draping, and will possess a waist pattern drafted to their own measures.

A LESSON IN DRESSMAKING.

ANNIE L. BENNETT.

Practical Arts High School, Boston, Mass.

"Industrial education is a fad. Brains do not count in these days with either teachers or pupils; hand skill is all that is looked for in the one or aimed at with the other." Such was the remark of a prominent educator, just after the organization of the Practical Arts High School.

Is industrial education merely hand training? Is the successful teacher of manual work one with less mental ability than her fellow workers in academic branches? Are the successful hand workers in the world today men and women of merely mechanical skill, or those whose power to grasp and reason out problems makes that skill a greater factor in success? Is there even in the "first class" dressmaker a something which the one who comes a little short of success lacks? Is it an inborn "gumption" which can neither be acquired nor developed by a course of mental training that makes the one able to originate ways and means of accomplishing results which the other admires but cannot follow? Is there in each particular division of the great subject of industrial education a means of training both brains and hands, or must we depend upon academic work for the former and be satisfied with the latter for our own share in the pupils' development?

The lesson I shall suggest as throwing light on these questions consists of a series of problems worked out by the pupils of a dressmaking class near the beginning of their third year in the high school. These pupils had had one year's previous training in this vocation line, which gave them practice in drafting, cutting, fitting and making shirtwaists and simple seven and nine-gored skirts of washable materials, and had in this second year of their trade already drafted, cut and fitted tight waist linings. With these drafts as a foundation the following problems and their immediate results made up the remainder of the year's work.

The latest imported seven and nine-gored skirt patterns having been obtained, each in three sizes, the pupils applied directly to them their system of drafting, and by careful drawing, measuring, and comparing the results with patterns drafted by them the year before in the same sizes, were able to note the changes in style that had taken place during the year, in the division of breadths, amount of spring to the gore, and width and placing of the flares. Then by careful comparison with dimensions of the different sized patterns a new set of rules was evolved to suit the prevailing fashion, the fundamental principles, however, of fitting hips and waist and determining lengths and curves remaining the same.

As one of the characteristics of the seven-gored skirt draft this year was an uneven division of breadths at the hip line, the pupils' ingenuity was more heavily taxed when each, using that as a basis, was given a separate design from the fashion books, calling for an entirely different division of breadths, from which she was to make a paper model to a scale from her own measurements, true in line and proportion. Much care was taken in the selection of these designs in order to give as much variety as possible to the work of the class. Some had equal front and back panels, others side breadths of equal widths; some called for plaited skirts, others for combinations of plaits and plain breadths. There were circular skirts with plaits and without and skirts of two, three and four breadths; thus each student, besides having the practice in working out her own problem, could benefit from the experience gained by her companions on those entirely different.

Finally came a study of the modifications of either the waist or skirt patterns or both that would be necessary in order to carry out the individual design and give at the same time the continuation of lines with beauty of curve and proportion which would make the dress a unit as pleasing as that of any beautiful work of art.

THE TEACHING OF MILLINERY.

CLARA S. GAY.

Practical Arts High School, Boston, Mass.

Our desire in the newly established High School of Practical Arts in Boston is to give the girls a real business training. The work in our department is given to them as if they were apprentices in a hat shop. The proper handling of the tools is the first important step. Then follows the measurement and construction of buckram and wire frames and the making of the hat, the covering of these frames with velvet, silk, straw, braid, net, chiffon or lace. The last step to be taken in the first year's course is simple trimming.

Before entering into the discussion of these processes there is a suggestion concerning the class room for millinery. We find it necessary to furnish the room as nearly like the work room of a regular hat shop as possible, giving the girls tables where four or six may work, low chairs, and foot stools. There must also be places to keep the work, and we have found the milliners' heavy hat boxes, which are like large drawers, very satisfactory. With some hat stands and a mirror the work-shop is equipped.

When the girls are ready for work we have a talk on the use of cutters, pliers and milliners needles—the last a source of surprise and annoyance on account of the length. We soon settle down to real work, that of cutting and making bandeaus of buckram and of wire of different kinds and sizes.

Next, a start is made in the cutting and making of folds. This requires more thought than the girls realize, for there is to be considered the true bias which is so necessary to make a fold fit well. Not only is there the true bias, but the fold has also to be cut on the ends and pieced with a firm, neat back-stitch, or the seam will full and pucker when stretched on the hat. Again there is the nap to be considered; it often happens if one is not careful that the nap of one end may run in one way, and the nap of the other in the opposite direction, thus making the shade of the velvet very different. After the piecing is carefully done, the strip is neatly catch-stitched and

then, the work on the milliner's folds, pipings, puffs, shirrings and other finishings may follow.

We are now ready to take up the buckram frame. The individual girl ascertains her own head size in order that she may have experience in fitting such as she would have in a regular shop. The width of brim is determined and whether it is to be rolling, straight or drooping. A paper pattern is cut according to dimensions, then placed on the buckram, which is cut and lapped on the edge to form the upward or downward curve of the shape desired. When the proper lines and curves are effected we proceed to wire, bind and cover the frame with wadding or crinoline, whichever the material to be used will require.

Then the circumference and height of the crown is thought of—whether it is to be large or small, tapering or square. The best proportions relative to the brim and the becomingness to the wearer must be determined.

After the crown is adjusted we are ready to cover the upper part of the brim. As a rule it is best to have the inexperienced girl first fit and cut a pattern of tissue paper. from which she may cut the covering to be used on the brim. This pattern is placed on the velvet with the bias in front or at the highest roll of the brim with the nap running diagonally back; it is fitted and pinned carefully with all wrinkles drawn out and then sewed over the edge and into the head size. The under brim is covered in the same manner and the edges slip-stitched together. A fold or covered wire is placed on the edge of the hat to finish it. The crown is covered and finished at the lower edge with a plain fold and bow, and the hat is then lined carefully.

This completes the foundation hat. By this time the girls are ready for something new and even a wire frame is welcomed with joy. Several models are given the girls to copy that they may have some choice and a variety to work from.

When we come to covering the frame with straw, interest in the work increases, and the girls are happy, for like many of us they rejoice to see quick results.

The first straw hat must have a fancy mull facing for practice, and the question arises shall tucks be used—one tuck or two or three? Or shall cords be employed, large or small, or wire?

Then there are shirrings, which are so pretty in clusters or several rows, or again, combinations of these may be used. The pupils choose for themselves, and this first work is generally very good, some careful students producing really excellent work at this stage.

They are now ready to do some work for themselves. They usually find a picture of a frame which they reproduce, or they copy from memory a hat seen in a window or on the street.

By this time the pupil has heard in her art work much about harmony, color and rhythm; she has learned to consider her suit or coat in selecting the materials for her hat, and she has grown aware of the importance when choosing a hat of giving heed to the shade and dressing of her hair, the color of her eyes and complexion—the shape of the hat and the trimmings for it. Moreover, she has had her attention called to the appropriateness of hat and costume for definite occasions.

All of these points having been carefully studied, she is able to decide more intelligently this really important question of suitable head gear.

By the end of the first year all those who do not seem able to sew well or trim with ability should be advised to take up a new kind of work—they will not make a success of millinery.

The teaching of trimming is another matter—that the girl has to do for herself, with suggestion of line, rhythm and value of colors. We know that a hat trimmed with ever so much effectivenesss is not valuable unless made with the utmost care and neatness; often the making is the principal part of a hat of this day, with just the right touch to finish it. For what milliner of high standing would send out a hat, no matter how chic, if it was not made properly? For this reason the greatest care must be taken in the part of the work dealing with the making.

These steps in the progress of making and trimming are repeated each year of the course, with more and more difficult problems dealing with mourning work, fur hats, lace hats and other characteristic features of the millinery trade.

We have girls of many types and dispositions, and find their city life lacks many privileges their mothers and grandmothers had for *home* training in domestic arts. We feel the need of this same training for them, as well as an intellectual one, to fully develop their characters. For this reason the Practical Arts High School of Boston has been established.

These girls who have worked at millinery have certainly gained patience in the first dull work in buckram wire and folds, and they have gathered knowledge of grace, and artistic lines and of the beauty of proper coloring; they have learned the values of material and the art of combining.

TEACHING DESIGN TO TRADE CLASSES.

GRACE W. RIPLEY.

Girls' Trade School, Boston Mass.

Four trades are taught in the Girls' Trade School of Boston, millinery, dressmaking, machine garment making, and machine hat making. From the beginning of her course a pupil works in actual trade shops where order work is done for discriminating customers. One year is the usual time taken for learning a trade. Besides the trade work, each pupil studies business English and arithmetic, design, gymnastics and cooking. Two periods of one and one-half hours each are given to the design work.

The first object of the design course is to give the pupils an opportunity to supply the designs needed in the trade shops of the school, and by so doing to gain experience on the creative side of this work.

The pupils work very hard so that they may get a design accepted, and are proud when their work is pronounced of a salable quality. Some pupils are able to make salable designs as soon as they learn the special requirements in making designs for different materials. Two special design classes were formed last year for talented girls and these girls made even the most difficult designs needed in trade work.

We use the same elements in design that are used in the needlework, tucks, featherstitching, French knots, embroidery units, bands, hems, yokes, cuffs, panels, braid, lace, silk, etc. The pupils are taught to make combinations and selections, and their best ideas are used on our children's garments, underwear, waists, skirts, hats, etc.

The design work is closely related with the trade work. In the underwear department the girls design underwear, in the waist department, waists, etc. It helps very much in the beginning to work out many problems in tissue paper and to lay actual tucks in the paper and represent hamburg, lace, featherstitching and embroidery in Chinese white.

One of the most helpful and interesting things that we do is to make simple patterns, and this we do in almost every lesson. We begin by folding and cutting circles of different dimensions, then

ellipses, etc. Some pupils cut many circles before they can feel the curve. We cut patterns of yokes, stocks, jabots (plaited and plain), belts, cuffs and collars. We have dressmaking forms which are in constant use, and besides using these, the pupils cut patterns for each other. Often the pupils are given patterns to correct or make over.

We have done a good neckwear business this year. All the neckwear was designed, stamped on cloth and made entirely by our girls. We found it very difficult to keep our prettiest models on hand, as they sold so quickly. A showroom containing glass cases was established last year, and this is kept in order and made attractive by different girls in turn. Whenever our stock of neckwear runs low, paper models are put into the case, so that people may order from them. The models are so pleasing that people often want to buy them thinking them real.

I believe the taste of the general public is constantly maligned and that people really prefer pretty to ugly things. What people do not like is a thing that although perhaps faultless is without charm. A trade school pupil often presents a design which is not bad and we sometimes put the responsibility on the public, saying "Put it into the case for a few days and see if it will sell." The neckwear designs which have sold best are the ones which had either individuality of shape or charm of decoration. A fine linen jabot without decoration but with long points sold as fast as we could make it, to the great delight of the small designer, who cut the pattern after having attempted several dozen which were correct but entirely uninteresting.

We use quantities of light weight brown wrapping paper and white tissue wrapping paper for our cutting work. My rag-bag is also in constant requisition. Some of the finest dress-makers of the city send us scraps from their work rooms. The larger and finer pieces are used by the millinery girls in making silk ties and this gives them an opportunity for extra practice in handling and combining materials and tying bows. We use these scraps constantly in our color study, which consists of exercises in matching and choosing combinations with reference to beauty, utility and appropriateness.

Some pupils have a natural color gift which enables them to make beautiful color combinations by instinct. These need merely a chance to exercise their powers, but others need much training before they can make even passable color combinations. Last year a mull tie of simple design was embroidered in seven or eight different colors of

Persianna and we watched the selling qualities of the different colors. Our customers usually bought the ones we considered prettiest.

Our millinery girls also made designs for bands of braiding and embroidery and ornaments which were so fashionable this year, also chiffon and silk roses for ornaments. This gave them excellent practice in handling materials, combining colors and making designs.

The necessity of economy in design is an important lesson for a designer to learn. An order of a design for a chemise was given to a girl, who in a short time presented a good design containing 134 dots. For the price to be paid we could not afford to embroider so many dots and the pupil simplified the design to 74 dots, then to 34. The customer was much pleased with the final design. A great majority of commercial embroidery patterns could be simplified without hurting the effect of the designs.

It is impossible to take the trade school pupils to the stores very often, so we bring the stores to the pupils by weekly exhibits loaned to us by the best stores of Boston. From these exhibitions the pupils make selections and get inspiration and new ideas.

The girls employed on machine-made hats made plasterline models for dolls' hats half the size of the large models used for blocking and pressing hats. The plasterline models were shellacked and used. The girls gained training for eye and hand and at the same time made useful things.

A designer is a necessity in a machine-operating factory. The methods of making machine operator designers are taught in an elementary way to our machine garment makers, in the hope that they will take an intelligent interest in the creative side of their work and strive to advance themselves in their trade. When a pupil begins to volunteer ideas upon the constructing and ornamenting of our products, we know that we have begun to succeed with her.

On the last three days of school there were no design lessons, yet the design room was full of pupils working hard on designs to use in the summer, and going ahead mainly without help or criticism. A little Italian girl made a design for a Dutch collar on Friday, embroidered it on Saturday, wore it to school on Monday and took about twelve orders from it before Wednesday. She showed that she had imagination and the initiative to carry out ideas. She is one of those who makes us sure that the study of the trade design is very much worth while.

PRACTICAL METHODS IN A HOUSEHOLD ARTS LESSON.

EMMA S. JACOBS.

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Out of the whole list of lessons in household arts, I have chosen the one on making a fire, and hope to show how to present the materials direct the attention of the class, secure the interest and activity necessary, and teach not only the art of making the fire, but also the principles on which the making, the keeping, and the control of the fire are based, and their application elsewhere in the home.

As an introduction to the lesson, let there be a discussion of the object of the assembly of the class in the kitchen or cooking school or the presentation there of a range. Let the questions be definite, and of such a character as to secure from the pupils a free response, that a certain degree of sympathy may be established between the teacher and the pupil, that the teacher may discover the store of experience and knowledge in the possession of each pupil, and that this store of experience and knowledge may be set forth. The discussion should show that heat is needed to develop flavors and otherwise prepare food to be eaten, that different materials are used to produce this heat, that these materials are burned, and that some of them require stoves or other apparatus of special construction for the combustion.

Now show by experiments the conditions which govern and control the burning of fuel. For these experiments have a candle, matches, cardboard, thick felt, narrow strips of wood, a tumbler, a wax taper, and lime water. Give no suggestion of the results to be obtained. Try the experiments beforehand to be sure the desired results can be obtained. During the experiments, direct attention to the materials used, what is being done to them, and the results obtained. Let the pupils describe all this in their own words, but do not hold them in too rigid control or direct attention too closely to the spoken word. Then lead them to draw conclusions, which, when stated in formal language, will be the principles desired.

Such points may be taught by the experiments as that the candle stick must be warmed, and the fat melted by holding a lighted match against it, before it will burn, that the match will not burn unless it is rubbed on a rough surface which warms it; that most fuels must be warmed before they will burn, but that some will take fire when warmed but slightly; that the candle will not burn, unless air reaches it and the products of its own combustion are removed.

The presence of carbon dioxide can be shown by the taper and lime water. Children will remember this though they do not understand it, and the teacher will later be able to show the production of carbon dioxide with baking powder and active yeast.

Now show a range constructed of glass and compare its parts with those of the coal range to be used. Demonstrate the passage of smoke, carrying steam, carbon dioxide and other gases through this range, by introducing a smoke producing material below the fire box. After this let the pupils proceed to build a fire of wood in the steel or iron range, then by changing the arrangement of the various slides and doors in this range, let them prove what has just been shown in the glass one. They will learn that the smoke takes the most direct course to the chimney; that when the opening below the grate is too large, the smoke will escape through the cracks into the room, instead of into the pipe; that when there is obstruction (as soot or a damper) in the pipe, the smoke will pass out into the room; that when the opening below the fire is too small or there is obstruction in the form of ashes in the pit or below the fire, the material will smoulder and not burn; that when the opening to the pipe which is nearest to the fire box is closed by slide or otherwise, the smoke will pass over and around the oven, seeking the other exit to the chimney and so heat the oven; and that when this opening is closed the material burns more slowly.

We are thus able to teach that by having a short or direct draft, we cause the fire to burn briskly, and that by having a long or indirect draft, we cause it to burn slowly, but at the same time save fuel and heat the oven. We can also teach that the object of the various slides and doors is to increase or decrease the supply of air so we may control the burning of the fuel and regulate the distribution of heat.

During the building of this fire, let the pupils determine the reason for cleaning all ashes from the range, for placing the pieces of fuel lightly on one another, and for keeping the fuel below the level of the top of the fire box. Show when and how to blacken the range,

and let them do it, as well as other work connected with making the fire, such as cleansing the tea kettle, putting freshly drawn water in it, and sweeping the floor around the range. At each lesson following this have at least one pupil attend to the fire, and give reasons for what she does.

The next step is to apply these principles to the ventilation of a room. They will readily understand that we are in a measure like the candle or the fire. We need oxygen, and produce carbon dioxide which must be taken away. The best position for the inlet is at the floor line or just above it, and for the outlet at the ceiling or near it; moreover, there is more rapid change of the air if the inlet and outlet are on opposite sides of the room. Other applications of the principles taught are found in slow heating of materials, spontaneous combustion, putting out fire, and the action of individuals when there is a fire.

It is not necessary or even desirable to go into minute details or explanations involving terms used in physics and chemistry. Demonstrate the facts in a simple impressive way, draw the most obvious conclusions from them, and establish rules for action, then when these pupils reach the high schools they will readily grasp and understand the reasons for these things.

The materials we have used are interesting, they can be easily handled, even the children securing good results. Many a child has proudly shown to those at home what he has done or seen done at school along this line. Though the children may be familiar with the materials used, and to some extent with the facts brought out, yet during the experiments the mind can be led by skillful questions to reason back to cause, to fit cause and effect, and they will answer many of their own questions. Moreover, through some such method of presentation, the child is shown how to collect and analyze material which comes under his observation, and to draw conclusions or deductions therefrom, which may become the governing principles of action.

These pupils are passing from the stage where they are so largely controlled by impulses; their inhibitive powers are becoming stronger, ideas are held in consciousness long enough for contradictory suggestions to arise, and they begin to weigh things and to act with deliberation. They are passing from childhood to maturity, and if they are to help and to receive help from their fellow men, they must be able to observe accurately, think rapidly, and act decisively and effectively.

Much of the teaching in the manual arts leads to such results. Teachers of these subjects have a mass of material pr marily and inherently interesting to children, which can be utilized to educate them. Therefore, thought should be given to the best means of presenting it to secure the development of the children, or to inform them, using the word in its etymological sense of "shaping from within."

DOMESTIC ART: ITS CONTENT AND POSSIBILITIES.

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Because of the wide-spread feeling that the home exerts an almost unbounded influence upon the persons living there and that through these persons it has certain powers for good or bad in a community, and because of the growing use of the school as a social center not only during school hours but also at other times, the sociologist, the educator and others are seeking to bring about in these two centers conditions which will be conducive to right living and right thinking. Already have we made progress in the subjects relating to the sciences and are therefore on the way to more healthful and sanitary surroundings. Let us consider, along with these, the making of our habitations more beautiful and attractive to live in, and so round out the plan by which the individual is to be better able to live a happy and efficient life.

Our sense of beauty may be innate by inheritance, education and practice, but as most of us do not seem to have inherited a completely developed sense in this direction, we must acquire it by the latter methods.

It would seem that we have become accustomed to think of art as far removed from ordinary things which we see around us at all times and among which we have most frequently to choose and to judge, for people are constantly building houses and decorating them, selecting furniture, floor coverings and other things necessary, or thought to be so, in the furnishing of a home, planning dresses and making or selecting hats, apparently without thinking that these belong in any way to the field of art.

To my mind, domestic art should consist of the study of the principles of color and design and their application to hygiene and economics, to the home, to the individual in the home and, indirectly to the neighborhood and to the town. There are such splendid opportunities for the utilization of the principles of color and design in connection with every-day life, by applying these laws to the things

about us that we should be able to learn to discriminate, to gain a foundation for our judgments and gradually to acquire an appreciation for the beautiful which will react on our surroundings and associates.

In the first place, I believe that courses dealing with color and applied design, very closely correlated with domestic art, should be required of every one taking work in domestic art. These courses are not intended to make designers and colorists of the student but to give her a better understanding of the principles of design and color and a foundation upon which to base her judgments, a standard being as necessary here as a foundation knowledge of certain basal sciences before taking up dependent subjects. If instruction in design and color is not available in an art department, it should be taught in the domestic art course. In the second place, to begin as early as possible in the life of the child and to continue through her school age with work in color and design would seem to me necessary in order for her to develop such love for the beautiful that she will try to produce it in the things she makes and in her surroundings, and in order that she may also acquire powers of discrimination and habits of exercising these powers.

In the high school domestic art may be correlated with mechanical drawing and the decorating of furnishings planned for the original house designs made in this department. The pupils should be able to discriminate and judge for themselves whether or not the design of the furniture adheres to the law of appropriateness, whether or not the decorative design follows the construction lines or destroys them through its ornateness or exaggeration of curves, and whether or not the designs on different parts of a piece of furniture are harmonious. The pupils should be able to work out their color schemes according to the laws of analogy and contrast. They should know that some colors reflect light whereas others absorb it, and they should consider this in papering rooms having different exposures. They should be able to judge for themselves the effect of large bold figures and naturalistic designs in wall paper which is to be used as a background for pictures and furniture. They may then be able to experiment with the use of vertical lines in paper and draperies or the use of horizontal lines in dadoes, borders and hangings. They may decide for themselves as to the sanitary and economic advantages of different floor coverings, and will see that in selecting them the sequence is more pleasing if the darkest tone in the color scheme is the floor, with the walls next lighter and the ceiling lightest of all.

One point in regard to furnishing which must be dwelt upon is that of fitness to purpose. How often we think things belonging to others are what we should have and buy them only to find that they are not at all suitable for our purposes. Another factor to be considered thoughtfully is durability. A well made piece of furniture with good lines and suitable to the purpose for which it is used, is always preferable from the standpoint of beauty and economy to the more elaborate, cheaply ornamented and glued-together pieces which we so often see. A splendid opportunity to exercise the powers of discrimination of the individual is in observing things around her, good and bad, and in forming judgment concerning them.

I have not said very much about the subject of dress, for I feel that that phase of domestic art is fairly well developed as far as the making of garments is concerned. Besides teaching the sewing we must at the same time help to form ideals and habits of thought based on the laws of appropriateness, economy and hygiene and the principles of design and color in connection with clothing. This law of appropriateness is one that cannot be too carefully emphasized and discussed. If we are at all observing we see that many people disregard the influence that occasion and occupation ought to have in deciding the design, material and cost of dress. We see women doing their work about the house or visiting on the front piazza in kimonos. Some even venture to the corner shop in this apparel. We see women in the street cars in gowns that are appropriate only for those who can ride in their carriages. We see shoppers attired as for a reception. Why do so many school girls dress as though they were going to an afternoon tea, with fancy silk or net waists, short sleeves, picture hats, and high heeled shoes, and in cold weather with low slippers and lace yokes which furnish almost no protection? Why do we see little children attired in silks with much lace, many ruffles and jewelry?

Do these conditions and the many others that readily come to mind show much judgment in regard to the laws of appropriateness and economy? Do they show much regard for the principles of design and color? We all agree, I think, that they do not, but why is not better judgment shown? To me it seems a question of *ideals* and the training, or lack of it, necessary to assist in forming the proper standards with reference to these matters.

In giving these suggestions to the content and possibilities of domestic art, I have not tried to outline a definite course of study.

Each of us must work out the details for her own school according to conditons. I have presented what I consider the most important phase, that of art, on the knowledge of which our judgments and tastes ought to be based, and from the standpoint of which a child should begin early to observe the things in her home, in her school, and all about her, in order that she may know how and where to find and create beauty.

That it is st ll with us an effort instead of an instinct to make all things beautiful, is very evident when we think of the exaggerations in dress of the past year or two and the furnishings of our homes. It is encouraging, however, to know that women in the homes and in the clubs have taken an interest in the reorganization of the present scheme of dressing and in the simpler, more useful and hygienic furnishings of the home, in order to add to their own comfort and happiness and to contribute to a better and more reasonable way of living.

HOW TO MAKE THE HOUSEHOLD ARTS EFFECTIVE IN THE SCHOOL AND COMMUNITY.

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I can only talk from the supervisor's point of view. Here in a meeting of this sort we want to learn something which we can go home and try, and we Californians in particular always want to work things out. I think that we cannot overestimate the importance of interesting the community. Unless we make the mothers, fathers, aunts, and cousins just as interested as the children are, our work will not be far-reaching in its results. We do not, however, always have sufficient money to work out our plans and we sometimes lack the sympathy of the grade teachers, principals, and superintendents.

Now, one thing we have to do as teachers is to win the people with whom we work, and there is nothing truer than that if we win the children, we win public interest. The only way I think of to make household arts effective in the schools is to make them practical, but we must adapt the work to our communities. The children in our schools or in our own homes, being interested in dolls, will take delight in making dolls' clothes. But do not forget that children are children. Do not make them do great long things, but give them short and practical work which they can easily and quickly finish.

Try to help the grade teacher to carry this spirit into her work. I like to think of the household arts as the home work. That is your problem. If you have thought that you were a special teacher, try to say to the grade teachers, "Let us work together." Having the children make reports and send them back is a good idea. We cannot make reports and correct them, but we can inspect and keep track of the work. We should go down in the lower grades, and begin with the eight and nine-year-old girls. Have them sew, not sample stitches, but real stitches on real cloth, muslin, calico, or whatever it may be, so that they may recognize hemming, back-stitching, etc. Is it not well to have these girls who so early leave school, leave able to take care of themselves and their clothing? People suppose

that children do not care about their personal appearance, but the children, beginning with the lower grades, may be made to care. We want to give the children a much larger horizon. Not until we have practically all of the people in the public schools appreciating what handwork means, can we have the handwork gain the high position that it needs.

A speaker who preceded me spoke of the interest which the people in the different districts, especially the manufacturers, take in such work. The thought that I want to leave with you is, that when you are given the great opportunity of going intimately into the child's life, make the most of it. Be mothers, grandmothers, aunts, and cousins to every one of your children. This will pay in the end, for the moment you catch one child in your net the influence will spread, and you will soon have all the children.

THE TEACHING OF METHODS OF HOUSEWIFERY IN SECONDARY SCHOOLS.

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The Standard Dictionary defines housewifery as "the part of household management coming under a woman's direction." We may well ask what part of such management does *not* come under her direction and who will manage any part, if the woman does not?

The teaching of any and all subjects of housewifery should include a presentation of the facts underlying the process whether these facts be the contribution of physics, biology, art, economics or what not. These facts should then be carried out in actual work or practice. *Knowledge* applied creates *power;* power repeatedly exercised ends in *skill.* The first two, the ordinary high schools should strive to give in as large a measure as possible; the last cannot be attained in them to any high degree.

We shall probably agree that an ideal house is that one which provides a healthful, beautiful and economically-conducted environment for the family life. Such a house forms the middle of three concentric circles. It is the closest environment of the clothed human body and may make or mar its welfare. On the other hand, its efficiency depends largely upon the perfectness of the larger and more distant environment—the town, city or country, even the world.

The end of all housewifery should be the highest efficiency possible to each individual. For this end *health* should be sought. The healthful house is the clean house—a house filled with a plentiful supply of clean air and sunlight. Its furnishings must not interfere in number, style, color, or material with these fundamental factors of health; at the same time they must please the eye and be in harmony with the available capital of time, strength and money.

Since perhaps more time and strength are used in removing *dust* than in any other one process of housewifery, this process will serve as an example of method.

The mind of a high-school pupil should be ever ready to ask: "Why?" Why, then, should dust be fought?

As housewifery is preëminently applied science, high school pupils should look to their entire study of bacteriology for the answer. Bacteriology is the science which most firmly underlies the study of cleanness and nothing can quite supply its place. However, "dust gardens"—to use a descriptive common term rather than the technical name for plate cultures of dust—will alone furnish a sufficient basis for the answer. They make clear that in common household dust there are living cells capable of growth, of reproduction and the production of chemical changes. These changes may spoil our food or furnishings, thereby causing economic waste; or they may, in our bodies, cause discomfort, disease and possibly death. Because of their omnipresence, their invisibility, and their rapid multiplication, methods of *prevention* should be studied first in order that their removal may be ascertained and made as easy as possible.

Prevention consists in furnishing few lodging places for dust—smooth non-absorbent surfaces in finish and fittings; in providing conditions unfavorable for growth, floods of sunlight, change of air, absence of exposed food, dryness and cold. With due attention to prevention and removal there will be little need of disinfection, which is the making harmless that which has not been or cannot be prevented or removed.

The removal of dry dust includes the two common processes of sweeping and dusting. What do we sweep, and why? Floors, will answer the first question and the why is the general answer of sanitation—to ensure the prompt, rapid and complete removal of all dirt.

Dirt on floors consists of (1) litter—bits of paper, threads, etc., that should not be there; (2) grit and street filth—that should not be brought into the house on our uncleaned shoes; (3) fluff—the débris from the wear and tear of fabrics—the more fabrics, the more fluff! All of these are laden with bacteria, molds and occasionally with wild yeasts.

If sweeping results in throwing this visible and invisible dust into the air, it is not removal but simply a change from one place to another—like all blowing, beating, shaking and brushing. The *purpose* of sweeping is to gather together coarse dirt with the attached dust, that all may be removed from the house. The *aim* in sweeping should be to raise or scatter as little dust as possible into the air, for this must settle again and is therefore not removed.

Rough surfaces, as uneven floors and carpets, hold the dirt and dust tenaciously. A somewhat inflexible, stiff implement, as a broom,

is necessary to reach into the depressions and among the fibers to dislodge the dirt. This broom, if dry, snaps and so throws dust; if damp, it will *hold* the dust without scattering so much. This is the simplest application of the universal principle that damp surfaces hold dust.

A broom used on loosely woven carpets pushes the fine dirt through, where it remains on the floor beneath to be ground into powder and returned at every footfall. Such carpets are difficult to sweep in such a way that the dirt may be collected from the surface without being pushed through. Pile carpets or rugs hold the dirt on the surface or lightly in their meshes. The broom should not, then, be pushed down too heavily, for most carpets are not over one-eighth inch in thickness.

With proper attention to sanitary habits and preventive measures, smooth-finished floors need little if any sweeping. Litter may be picked up by the hand or taken from its place without sweeping the whole floor by using a small broom with a long handled dustpan. This method is equally good or even more effective on carpets.

If much grit is present, a soft brush should first be used on polished surfaces. It does not scatter dust so much as a broom and its stroke is a push instead of a pull. The pupils should study the mechanical advantage of this. Mattings should be treated as nearly like bare floors as possible. A broom should not be used upon them.

Sweeping lessons should consider and illustrate the dress of the worker. This requires smooth, washable fabrics so made as to allow unrestricted use of the muscles, and protection also for the hair and nostrils. Here may be applied the principles learned in the study of textiles, dyes, design and in laundrying. Such lessons must also include attention to the position of the body in order that energy may not be dissipated and wrong physical conditions result; the position of the hands on the broom handle, with thumbs opposed; the stroke or leverage–a pull not a push–and which should be in *front of*, but not *toward* the worker: the short, light, wiping overlapping movements necessary to prevent raising dust and pushing dirt through; the stoppage of the broom on the floor and not in the air, to overcome the inertia of the rising dust current; the use of both corners and both sides that complete efficiency in wear may be gained; the cleaning of the broom by removal of entangled hair or fluff and the washing away of collected dust, with cautions as to rotting of the stitching and rusting of the mount; and finally, the proper drying and storage to ensure cleanness and

full return in service. A second application of the scientific fact that damp surfaces hold dust is given by the use of "dust catchers"—damp pieces of paper, damp coarse shavings, anything that will not stain the carpet or allow bits to remain in the meshes to mold or sour.

The gathered dirt—sweepings—must be taken up. For this, use the damp covered dustpan which shows the third application of this principle. This is prepared by covering the dustpan with a piece of wet newspaper fitted to its flat surface, but standing up as far as possible at the back and sides. The dust caught on the back will show its useful purpose. This is of prime importance in sweeping stairs for here the worker's face is directly over the rising dust. Stair sweeping emphasizes also the need of covering the nostrils.

Sweepings should be burned, for fire will safely dispose of all dangerous micro-organisms. The damp paper when wrapped about the sweepings furnishes neat removal and safe storage, if they cannot be burned immediately.

A carpet sweeper is a brush with broom action enclosed in a box which serves as a dustpan. The movements, methods of cleaning the brush and box, as well as its storage should all be considered in relation to cleanness and economy. Its proper use on carpets and rugs obviates the pushing of dirt through or into the fabric and prevents raising dust into the air. Wisely selected and used, it is an economical, efficient and sanitary dirt remover; improperly used or cared for, it is inefficient, uneconomical, and may become filthy. As it cannot clean the edges of an all-over carpet, its use here is not as completely sanitary as it is with rugs. The edges must be cared for by the use of the broom in order to remove the dirt, discourage insect pests and prevent marring the finish of the room

Sweeping is the most dust-spreading process of all housework; therefore there should be as little of it as possible. The "dust gardens" will show plainly that sweeping should not be done while food is being prepared or served; that whenever it is done, accessible food should be covered, and above all, that in order to attain cleanness the dust which sweeping always raises must be allowed to settle thoroughly before its removal by dusting can be accomplished. This will be well shown if one "garden" be planted immediately after sweeping and another after the lapse of some hours.

No house is clean so long as the air is laden with dust. The cleanest house, therefore, is one where little sweeping but much wiping of floors is done.

Dust is not removed from the house by whisking a feather duster or flirting a cloth over surfaces or even by wiping it into a cloth which is then shaken in the room or stored in a dust-bag to be used again and again until—who knows? The ordinary dusting allows still another application of the principle that dampness holds dust. A soft, rough, absorbent cloth or similar material, not linty, must be chosen and the dust wiped up into it, the dusty portion folded over and a fresh portion used. Dampness may be given by either water or oil. A properly dampened duster will not injure polished surfaces. Injury results from too much moisture or a too dirty cloth. After washing, the dust-laden cloths or mops need thorough drying before they are stored, for no damp, dust-laden article should be stored in a dark warm place, where conditions are favorable for fermentation.

Sweepings burned and dusting implements washed ensure, through fire and the sewer, the final removal from the house of the invisible living organisms of decomposition and disease, as well as the dead animal and vegetable matter and mineral grit on which they are carried about.

These two methods of disposal are typical of all methods in housewifery. They show how through housework there may be a daily application of physics, chemistry, bacteriology and other sciences. Properly done, housework becomes one of the best means of physical culture. It also furnishes almost unlimited opportunities for the study of values in manufactured articles and their relations to industry and social conditions,—all of which are factors of economics. Above all, the study of housewifery should prove that "any necessary work may be greatly done."

The end sought—complete efficiency in human beings—raises the business and profession of housekeeping to a plane far removed from drudgery.

THE "HOUSE COURSE."

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The chief purpose of the work in Home Economics in our high school is to show to the pupil the importance of the home, to arouse interest in its work by giving familiarity with its common processes and their underlying principles, to indicate the relation of the home to the community, and to develop a sense of civic responsibility. The study of food, shelter, and clothing affords an opportunity to present some of the economic and esthetic as well as the scientific problems involved in the management of the household, and to give through these a sense of values, a standard of living, and a control of the common materials with which one deals in the home. The study of the house itself, or as we call it our "house" course, opens up the discussion of a great many of these problems.

This course has been the most popular in our high school work in Home Economics. It meets five single periods a week, two of which are devoted to work in household art.

The following is a short outline of the course.

A brief study of the early human habitations and a comparison of the homes of other people with those of to-day.

The development of the American house, including the study of the New England and southern Colonial homes, and the home life and occupation of that time; a comparison of the home life of a hundred years ago with the home life to-day; reasons for the changes that have taken place and are taking place now; effect of changes on home life.

Some problems involved in the building of a modest house: (*a*) the selection of the site; soil, drainage, surroundings, accessibility, improvements; (*b*) the drawing of house plans adapted to the site; (*c*) the cost and relative value of building materials; (*d*) the construction of the house; cellar, foundation, walls, and roof; (*e*) heating, lighting, and ventilating; a study of various systems as to convenience, cost, and efficiency; (*f*) the plumbing system of the house.

The decoration and furnishing of the house considered as to sanitary value, artistic value, quality, and cost. This is a direct application of the work in design.

Care of the house from the sanitary point of view.

The care of textile fabrics including cleaning and removing of spots and stains.

Some of the problems involved in the maintenance of the home, such as division of labor, domestic service, apportionment of the income, and the relation of different members of the family toward each other.

The housing conditions in Chicago, what is being done to improve these conditions, what is being done to elevate the home life in the crowded districts, and our responsibility in connection with some of the civic problems of the day.

The art, in connection with this course, includes a brief study of decorative designing, involving the principles of applied art in its relation to the home. The problems of proportion in space division, of balance, flow of line, harmony of shapes, rhythmic repetition are studied as they are encountered in designing curtains, table and pillow covers, pottery, lamp and candle shades. Both the design and its rendering in actual material are made with the purpose of developing the originality of the pupil and of teaching her the rules and principles that govern the expression of her own idea.

The pupils are allowed five or six thousand dollars for the building of the house. The price is limited for two reasons, first to simplify the work and second to show what can be done for a sum which seems to these girls a very small amount. By the time their house plans are completed they are ready to apply their work in color and design to the decorating and furnishing, studying here the influence of Burne-Jones and Morris, to whose joint efforts are due the complete revolution in decorative art during the last half century.

All the time this is being done, each has in mind a definite family which is to occupy this house. Usually it consists of the father, mother and two or three children.

Many of our girls come from wealthy homes and have very little idea of the cost of running a house, only one or two suggesting the possibility of getting along without a servant.

In discussing the question of clothing the girls made lists of what was necessary for the different members of the family. Some who had an allowance and had kept their accounts for years, had definite data on which to base their estimates of cost. The figures varied all the way from two hundred dollars a year for the woman's clothes up to six and eight hundred. Their estimates were discussed with much spirit, each one trying to defend her own.

Consultation at home changed some views. One girl came back and said "My father thinks a woman does not need six hundred dollars a year for clothes, she can dress very well on four hundred." So one estimate was changed.

Then the question arose, If you spend so much a year for clothes what ought the income to be? They found by applying the ideal divi-

sion of the income that the father in that home would need a large income. This led to the discussion of the incomes of the various classes of people. They were surprised to find that $2000 a year was above the average for the university professor. They began to realize that many people to whom books, education and at least a limited amount of travel were necessities must divide their income in such a way that a minimum amount must be spent for food, clothing and service. The division of the $2000 income became a very interesting problem to them and each girl put herself in the place of the mother in such a home and tried to see what she would do under the circumstances.

The discussion of this problem like that of many others went from the classroom to the dinner table at home and then back again to the class-room. The fact that the parents have shared in these discussions has added both interest and value to the work. It has been noticable, however, that the comments and suggestions made have usually come from the father, rather than the mother.

Through the continued interest of the home and the many messages that have gone back and forth between the school and home, the girls have gained a much broader outlook than would have been possible without this help.

A list of the reference books used follows:

The House, Bevier; *The Habitation of Man in All Ages*, Le Duc; *Prehistoric America*, Madaillac; *Prehistoric America*, Foster; *Woman's Share in Primitive Culture*, Mason; *Household Economics*, Campbell; *The Tree-Dwellers*, Dopp; *The Cave-Dwellers*, Dopp; *The Cliff-Dwellers*, Peet; *History of Architecture*, Fletcher; *Japan, Its Art, Architecture and Manufacture*; "Evolution of Domestic Life in America," *House Beautiful*, Vol. XII; *The Story of Architecture*, Mathews; *Colonial Days and Ways*, Smith; *Home Life in Colonial Days*, Earle; *Colonial Architecture of Maryland, Pennsylvania and Virginia*, Chandler; *Colonial Days in Old New York*, Earle; *Practical Hygiene*, Currier; *House Sanitation*, Richards and Talbot; *Care of the House*, Clark; *How to Build a House*, Moore; *The Craftsman Magazine*; *The House Beautiful*; *Sanitation in the Modern Home*, Allen; *Principles of Home Decoration*, Wheeler; *Rugs—Oriental and Occidental*, Holt; *The Furnishing of a Modern Home*, Daniels; *Laundry Manual*; *Cost of Living*, Richards.

THE TEACHING OF HOUSEHOLD FURNISHING AND DECORATIONS.

MRS. MARY E. WILLIAMS.[1]

Director of Domestic Science, New York City Schools.

The study of household decoration has been recently introduced into the public schools of New York City, and is being emphasized in the course of domestic science. It is believed that the course has been very materially strengthened thereby. Both teachers and children have enjoyed the work as it has been presented. The children are quick to seize upon the underlying principles governing color, and their natural aptitude and taste for color selection guide them in adapting the schemes to the plan of fitting and furnishing a home.

In some schools there are rooms set apart for the purpose. Classes take the liveliest interest in selecting wall and floor coverings, furniture and hangings in good taste and in keeping with the general character of the room. Where this is not possible, small model rooms made by the teachers from wood and card-board are shown and the lessons drawn from these. General rules and principles governing artistic decoration are given in a short talk or concisely dictated; then the children are supplied with scraps of wall paper and different colored fabrics and make their own selection as to what is suitable for a living room, dining room, or bedroom, as the case may be, until a complete apartment or home has been planned for.

In one case, in a down town Italian district, the children made very successful wall paper designs for these three rooms. The children of another school in an uptown district carried off a prize offered by a high school for the best plan for fitting up and furnishing a model flat for use in the work of this high school. So it is hoped that the course may be a step toward vocational work, whereby these children may be trained for some wage earning profession.

[1] Read by Miss Agnes Daley before the Educational Section of the National Education Association, Boston, July 5-6, 1910.

The ruling principle of decoration is simplicity. Art is the relation of unity and variety, and the aim of the artist is to maintain simplicity by controlling variety with unity. The application of simplicity to color and form is the problem of decoration. These facts the teacher keeps in mind, and plans to bring them before the child in a simple attractive way with the idea of stimulating the interest as well.

A general plan for presenting a lesson and a few points emphasized is given as follows: Discussion: (1) Location of room—north, east, south, or west; (2) light or dark; (3) use to which the room is put; and (4) expenditure. Plan to furnish from the standpoint of—the artistic, economic, and hygienic.

Wall Covering.—If a sunny room, choose paper or covering of cool tones, such as blue, grey, green, and all their shades. If cold (north exposure) or dark, choose warm, rich tones, such as yellow, red, or orange with all their shades. If the ceiling be high the ideal to attain would be to break the lines in order to lower the effect. If the ceiling be low, choose a design to heighten the effect—an unobtrusive stripe, perhaps. Red and any of its shades are aggressive and bring the lines into prominence. Blue is a receding color. Large designs tend to make a room appear smaller. Half tone or plain papers of light color make it appear larger. Papers with designs are more economical because they do not show soiling as readily. Plain ground or half-toned papers are more artistic as they make a good back-ground for other fittings and are more restful to the eye.

Floor Coverings.—Advantages of rugs over carpets: (1) more cleanly; (2) may be less expensive; (3) there may be different floor stains and finishing to correspond to the wood-work and furniture. The ceiling and floor should be kept light if the idea of space is desired. There should be regard for the design of a rug that it may be consistent with rules governing good taste and common sense. For instance a rug bearing the design of a large and wonderful Newfoundland dog is not in good taste—dogs were never meant to walk on.

Note: Pictures of rugs cut from the catalogs of importing houses may be shown to illustrate the best colors and designs and their appropriateness.

Furniture.—Have the furniture in accordance with the use made of the room, and of simple but good design. Do not use carved furniture, unless a vacuum cleaner may be made use of. Advocate the advisability of buying always good plain furniture, rather than that of cheap, gaudy design and covering.

Note: Toy furniture may be purchased and its good and bad points discussed. In some cases cheap-looking toys may be changed into those of good substantial design, by cutting, sand papering and repairing.

Pictures.—Have prints or photographs of good pictures rather than cheap chromos or bad paintings. Select suitable subjects for pictures to be hung in the different rooms discussed. Have frames in keeping with the subject, and of unobtrusive design, etc.

Note: Perry and Cosmos pictures of fine paintings and statues may be purchased and shown.

General Rule.—Have only useful things in the home and make these ornamental. Non-essentials such as pictures, statues, and flower vases can be chosen with regard to subject, line, and purpose.

Note: Presenting the subject in this way obviates any sensitiveness which might come about from presenting the subject to children of varied classes, as must needs be in a large city. Adapt the lessons as far as possible to the needs of the children with whom you have to deal. Of course a general knowledge of color such as the teacher must possess from study is essential to the guidance of the children, and she must be able to assist in the decision as to whether a color scheme is to be analogous or complementary in composition.

The study of art has always been an elevating factor in the life of a nation, and it is strange that our people have not been quick to realize the practical value of its application. Anything and everything we can do to strengthen our home life—to give to it breadth, beauty and culture—will make for the betterment of our nation. Therefore, let us not neglect any detail that may serve to accomplish this end.

THE RELATION OF FINE ART TO DOMESTIC ART.[1]

ELIZABETH STONE.

Teacher of Drawing, Brookline, Mass.

In a general high school a course in art, if it is to be of practical service to the pupil after graduation, must try to do three things: (1) Train the eye to a keener and more accurate vision; (2) give the hand reasonable facility to express ideas, or record impressions; (3) develop discrimination ("good taste").

Of the three purposes, the last, in a public school, is most important, for where an average man or woman finds it necessary to make ten drawings in a life-time, he, or more particularly she, makes daily that number of decisions involving the principles of taste. A man chooses his neckties, the pictures for his office, the bill heads and the advertisements that he uses, while a woman's day is filled with opportunities to make her clothes and her home furnishings a pleasure or an irritation to those who view them.

The power to make successful decisions about restful lines and harmonious colors is not intuitive, nor does it come as a marriage portion. With men it is rare, because they are denied the training that a woman gets by unremitting practice; for this reason, among others, voters have not yet abolished bill boards. You have, however, only to observe your fellow passengers in a street car to discover women to whom good taste is like the Japanese emperor who never died because he never lived, while a series of calls in any neighborhood will reveal garish pictures and hybrid furniture. There is a tradition that if a man live to be a hundred he never forgets the table manners he learned as a boy; decisions in matters of taste might often be included in that tradition, and therefore discrimination should be inculcated young, lest we grow up with nonsensitive eyes, or worse still, with no standard except the vicious one of fashion. In the latter case we shall have a procession of half worn things creeping toward the attic, relics of the horse-hair,

[1] Read at the Boston Convention of the American Home Economics Association, January, 1910.

black, overcarved walnut, and the crushed plush periods, for it is only simple, useful orderly surroundings which, as the fittest, survive. If a school training can help to create a demand for reasonable and harmonious personal and civic belongings, it will have justified itself economically and æsthetically. To accomplish something toward this end a course in art cannot mean drawing a picture; it must be instead a definite training in the principles of order which govern alike the selection of a bureau or the planning of a public library. There must be a reasonable amount of practice according to these principles and a very strict connection between such practice and the work in manual training and domestic science.

It is with this conviction that the art course at the Brookline High School has been planned. Every pupil of each entering class is obliged to take the course for a year. Thirty problems are solved, ten in design, ten in representation, and ten in color. Both writing and drawing are a necessary part of the course. The writing, which comprises a statement of principles and simple criticisms involving their practical application, is done in a notebook illustrated by the pupil with sketches or with pictures he has collected. For instance, we decide that a curtain which is looped back at a window is less restful than one that hangs in straight folds because the first arrangement has no harmony with the lines of the window frame. Patterns for dress braiding and embroidery are discussed in the same way, and girls are surprised and pleased to find that they can make more orderly, and therefore more beautiful, patterns than many of those in the shops. The boys study order in pieces of furniture, fronts of houses and public buildings, and, for application, draw designs for door panellings, book rack ends (later worked on out in the shop) and small metal accessories like drawer-pulls, hinges and escutcheons. The distinction between the proper uses of design and representation forms an important problem since the failure to grasp it is the root of many of sofa pillow and wall paper evils.

In representation we draw objects of common use, chairs, tables, kitchen utensils, and vases, for their powerful influence in making the pupil realize and observe the beauty that a line may have if it be clearly expressed and appropriate to its use.

The ten problems in color are planned, like those in design, to make the pupil familiar with some of the fundamental laws of color balance, color rhythm and color harmony, and then to afford him practice in accordance with them. Simple exercises in interior decoration are given, such as the planning of appropriate schemes for rooms of modern

proportions and various exposures. Study of the local decorator's windows, of furniture catalogues and paint manufacturers' literature accompanies this part of the course, and, wherever a comparison of prices is possible it is easy to drive home the important lesson that wisely selected, durable and orderly surroundings are also the cheapest.

Throughout the year the class examines articles in the current magazines, designs for embroidery and for wood-work, and simple house plans, a procedure that helps to counteract the notion all young people have, that anything attaining the dignity of type must be praiseworthy; it helps also to dampen their admiration for superficial drawing, for vacuous pink and white heroines whose hair or bonnet strings trail off into nothingness beneath their monotonous chins. Discrimination is further encouraged by a weekly exhibition on the bulletin board of good drawings in the newspapers, of thoughtful and witty cartoons, when we are fortunate enough to find that rarity in America, or of interesting art news, such as the opening of the New Museum in Boston. This year also there has been a series of lectures before the whole school on the selection of house furnishings; one on the subject in general, another on furniture, a third on the choice and disposition of pictures.

After the first year the courses in art are optional, and take up in more detail the general plan already outlined. In the third year a course in the history of architecture is offered, which, like the work in domestic science, first takes up the broad civic field and then the relation of the subject to the individual. The needlework department catalogues our designs for sofa pillows, centre pieces, scalloping, monograms and other embroidery so that when a pattern is needed recourse to the magazines or the shops is unnecessary. Moreover the pupil is not obliged to carry over knowledge from one subject to another; we plan to make the connection between. Thus we give some of our lessons in the domestic science laboratory, problems such as a menu card, or the scheme of table decoration for a particular meal.

The effort throughout is to make definite and practical a course that parents are prone to regard as vague and useless, to make the goal not technique or special ability in draughtmanship, but the increase in the child's power to see, to express, and to discriminate according to a few simple laws whose power is realized through examination and personal experiment.

PHYSIOLOGY AND COURSES IN HOME ECONOMICS.

PERCY G. STILES.

Simmons College.

The chief reason for giving instruction in physiology to students of Home Economics is found in the close relation between this science and hygiene—particularly the hygiene of nutrition. But the teacher of physiology must always feel reluctant to slight the educational side of his subject and its intrinsic interest. No science is better adapted to develop the power of inference, the habit of weighing evidence, or the rarer faculty of suspending judgment in default of data. None is more engrossing when historically treated; few are richer in the personalities of their leading exponents. Surely none have drawn so freely upon the other sciences for their experimental methods—a fact which makes physiological papers peculiarly varied and physiological technique notably ingenious.

Regarded as an applied science physiology is the foundation of hygiene and to an increasing extent of medicine. An elementary knowledge of physiology will do much to clarify one's judgment of popular teachings about health and disease, and to make possible some appreciation of the aims and achievements of modern medicine.

There are serious difficulties in the way of successful instruction in physiology. The most important is usually the lack of sufficient training in the supporting sciences. The physics and chemistry of the living body, a realm of the most complex relations, cannot be made clear to one who has not learned much of the physics and chemistry of the non-living world. A minor impediment to such instruction is met in the recoil of the immature student from a subject which he finds repulsive. This feeling is not often encountered when general biology or zoölogy has preceded physiology. The study of the lower animals will usually give an objective habit of thinking, so that when the discussion of the human system is begun the pupil will look out and not in, visualizing an impersonal anatomy instead of introspecting her own.

At Simmons College three courses in physiology are open to students of Home Economics. The most advanced of these is given in the Junior year and is common to the students of the school of science and

to such students of Home Economics as show a marked aptitude for biology. These pupils have had two full years of chemistry, one year of physics, and one year of biology, consisting of a general introductory course followed by one in anatomy and histology. They have had a good deal of dissection, microscopical work, and drawing. Their course in physiology is not intended to emphasize particular aspects of the animal economy but to be a symmetrical treatment of the subject nearly as extended as would be given in a medical school.

An alternative course is offered in the second semester of the Sophomore year. This is provided for the students who elect a minimum of biology, and it follows the introductory course mentioned above in place of the anatomy and histology. In contrast with the more advanced course, this one is frankly asymmetrical, the time devoted to nutrition being out of proportion to other divisions. Still it is designed to give a fair outline of all the main subjects with a full discussion of hygiene.

The most difficult problem which we face is the presentation of the essentials of physiology to the students who are not candidates for the degree and who are spending only a year or two at the college. It is necessary to give such pupils carefully chosen material, constantly bearing in mind their lack of preparation. They have had general chemistry but we cannot assume any other foundation upon which to build. The arrangement of this course will be discussed at some length.

No text book is used, the peculiar needs of this class not being met by any at present extant. A combination of Hough and Sedgwick's Human Mechanism with Fisher's Physiology of Alimentation could approximate to the requirement, but would fail to cover the subject of metabolism. Lectures, recitations, and laboratory exercises alternate. The conception of energy and its transformations is constantly prominent. In other words the body is viewed as a machine, complex indeed but not exempt from physical laws.

At the outset the cell is dwelt upon as the structural and the living unit. Cell-life is illustrated by infusoria and simple plants. When these are familiar it is easy to make plain the dependence of animals upon green plants and the immense importance of photosynthesis.

After this biological introduction the attention is directed more definitely to the human body. Its anatomy is briefly sketched with some reliance on a manikin. The properties of the chief tissues are broadly indicated. The distinction between the contractile, glandular, and nervous tissues on the one hand—those which are active in their metabolism and the connective and protective structures on the other

—those which are relatively stable, is emphasized. Sections of typical organs are studied and drawn. After the survey of anatomy it is easy to proceed to the subject of coördination, pointing out that there are two great factors in the unification of the body's working, the nervous and the chemical. The latter mode, the field of internal secretion, is just now coming to be estimated at something like its actual importance.

The central division of the course is now entered upon. The subject is of course the intake and output of the body, with the intervening transformations. The time devoted to this discussion is upwards of one-half the total. First comes a broad setting forth of the nature of foods, and a comparison between their proportionate relation in the usual diets and the percentage composition of the body.

The nature of the digestive changes and their purpose is taken up. It is necessary to combat the usual view that digestion is simply a means of making the food-stuffs diffusible. The processes involved have a deeper significance, the reduction of heterogeneous and foreign elements to simple units, or "building stones" in the forcible German expression, from which materials proper to the body can be formed. "Assimilation" is a key-word here; "naturalization" is a favorite one with the writer. The subject of the enzymes calls for careful treatment because of its unfamiliar nature. Secretion may be handled more briefly but stress needs to be laid on the nervous control of the glands. The story of digestion falls naturally into a series of sections, the saliva, the stomach, pancreatic digestion, the bile, the intestinal bacteria, the colon. The movements of the several divisions of the canal are described in connection with the chemical changes.

The facts in regard to absorption but not its abstruse theories may be given. The composition of the blood and the representation of the food-stuffs in it are then considered. The course of the circulation has been indicated in the early sketch of the anatomy and as the necessary condition of chemical coördination.

The service of the food-stuffs in the body is the next subject. Concerning carbohydrates we have to point out that the small but constant sugar content of the blood is secured through the formation of glycogen and of fat from the surplus of incoming sugars and the reconversion of glycogen to dextrose during fasting. The ultimate oxidation of dextrose with the release of energy as heat and work is discussed. The metabolism of fat is a simple subject for here we have only storage and oxidation to consider, the transformation of fat into sugar being unproved.

Protein metabolism is more difficult to explain to such a class. But

the students can understand that much of what we eat in the form of protein never regains that rank after the digestive cleavages, but merely serves the body as so much carbohydrate would do. One may hope to make the pupils see that when foreign proteins are devoted to the building of human tissues some waste will be inevitable. A fair illustration of the principle is found in the supposition that a house is torn down and another house of different architecture built from its timbers. There will be many unavailable pieces to discard. The discarded material may be turned to account as fuel either in the living body or in the supposed case of the new house.

The end products of metabolism and their elimination should be treated briefly, respiration finding its place in this connection. Then follows the statistical view of nutrition, quantity and proportion of the food-stuffs, the calories represented, the upper and lower limits of metabolism. The calculation of metabolism from the excreta may be explained and, above all, the proof with the calorimeter that the conservation of energy is a principle which the body does not transcend.

In conclusion, the brain and the sense organs may be allowed a few periods, but more as a basis for the discussion of general questions of hygiene than to give much detailed knowledge. Having secured such a basis we can bring together matter from all parts of our course to throw light on practical problems. Some of these are vital resistance and the factors concerned in it; the nature of fatigue; the causes of nutritional disturbance, connected with the diet and not so connected; alcohol (the much maltreated question); the power and the limitations of optimism to insure health; the physiological aspects of ventilation, etc.

We have found the laboratory work the hardest part of such a course to render profitable. Some drawing from slides (plankton, blood, starch, and histological preparations) has been prescribed. Enzyme action is best illustrated by salivary digestion and the clotting of milk by junket tablets. Varying the temperature, dilution, and other conditions may serve to extend these observations. Demonstrations of some other points are introduced. Among these are the irritability of muscle and nerve, the automaticity of the terrapin heart, inhibition (of the same), reflex action, and reaction time. It is the writer's tendency, after five year's contact with these classes, to subtract time from laboratory work and add it to the hours of quizzing and conference. For technical skill is certainly less the object sought than is a broad and general knowledge and an attitude toward the science that shall be *at once critical and receptive.*

CHEMISTRY FOR STUDENTS OF HOME ECONOMICS.

JAMES F. NORRIS.

Simmons College.

In entering upon a discussion of the relation of chemistry to Home Economics, it would, evidently, be a waste of time to attempt to show that the correct appreciation of many of the subjects considered as a part of the science of the household, can be arrived at only through a knowledge of chemistry. I shall rather turn your attention to the problem which the teacher of chemistry has to meet in deciding upon the aim, the content, and the method of the course in chemistry which is best adapted to the needs of students of Home Economics. The problem is, I believe, a most important one and one which is far from solved. What I shall say applies only to college work, and has to do with the teaching of chemistry to college students who, on completion of their training, are either to teach Home Economics, or apply the science in some practical way.

The value of the course in chemistry to such students is twofold. A course, properly conducted, is an important factor in the mental development of the student, and it furnishes much information which may be applied more or less directly to her technical work. The most important question which the teacher must consider has to do with the relation between the amount of emphasis that is to be put on the educational and on the informational aspect of the course. The answer to this question determines the content and method of the course. It is my opinion that the educational value of chemistry has been largely overlooked in the endeavor to apply the science to the problems of the household, and to furnish the get-educated-quick student with a lot of so-called useful information.

I am thoroughly convinced that we, at least, who have to deal with college students, can find the time to conduct our work in such a way that the student gains, to some extent, some of the mental qualities which are so noticeably lacking in the majority of girls when they enter college. In the first year work we have to deal with a mass of happy enthusiasts who are willing to learn whatever we set before them.

But something more than enthusiasm is needed. For reasons more or less clear, the training which the student receives in the high school does not lead to that mental development which is a concomitant of education. The graduate comes to college with a record of having completed satisfactorily work in this and that subject. She has in the past been stuffed with certain facts, but most have been forgotten, and it is evident that little mental power has been developed in their transitory acquisition. She lacks the power of concentration, is innocent of logical thinking, and has no conception of how to attack a problem. She has the wrong point of view, placing too much reliance on authority. She has been trained to rely on her memory, and has not been shown how to reason.

It is an educational crime for us of the colleges to continue to feed her with facts unless they are well seasoned by logic. Each one of us must feel that we have a sacred duty to develop the minds of our students—to assist materially in their education. When they leave us they should be capable of more accurate reasoning, and should have developed to some extent the power to weigh cause and effect.

I believe that the aim of much of the teaching of chemistry to students of Home Economics has been purely informational. I do not believe, for example, that the practice of teaching the chemistry of foods to students, who have had some time in the past a course in chemistry in the high school, is a sound one, and yet this is done. The results are most distressing. Egregious blunders are made by the graduate, who has, perhaps, hydrolyzed starch, used Fehling's solution, and precipitated proteins, but is ignorant of the principles of chemistry.

Let me now outline the way in which we are attempting to solve the problem in the institution with which I am connected. I want to say at the outset that many details of the various courses in chemistry are changed each year— we are not sure of ourselves yet—but the general plan of the courses has been arrived at as the result of the careful watching of results for several years.

In the first year the students follow a rather thorough course in inorganic chemistry. Eight hours each week throughout the year are given to this work. There are two lectures, two recitations, and four hours of laboratory work. The sections are small and each student receives individual attention. The prime aim of the course is to develop power in the student. Many applications of chemistry to daily life are presented, and whenever possible the student is encouraged to observe and explain by what she has learned in class, the

chemical phenomena she meets. The recitations are an important part of the course. Here clearness of expression is insisted upon as an evidence of clear thinking. After a number of facts have been learned a question or problem is proposed, the solution of which requires the use of these facts. The endeavor is constantly made to make the student reason. Such training as this is, of course, valuable with all students, but it is particularly necessary in the case of girls.

Toward the end of the first year the student is given a number of simple compounds to identify. The work is not routine qualitative analysis, and few directions are given. The student is left more or less to her own devices in finding out what she has in hand. She has accumulated throughout the course most of the facts which are necessary in the identification of the substances given to the class. She must use her wits and common sense in bringing to bear her knowledge in the particular problem before her. Much of good comes from such work, although it is slow and the teacher is often discouraged.

All students of Household Economics who are candidates for degrees take the course in general inorganic chemistry. At the end of the year we find that some have developed materially under the treatment, and some have not. We have come to the parting of the ways. Those who have proved themselves capable of winning their way in science, and who show an interest in scientific things are encouraged to make the best of their capabilities in an extended study of chemistry. Those who have not shown such interest, but have satisfied the requirement in the chemistry of the first year, pursue work in decoration, design, sewing, and similar subjects. It is considered necessary, however, that these students should know more of chemistry than what they have gained in the course of the first year. They follow for half a year, eight hours per week, a course which is designed to give them such information in regard to organic chemistry and foods as is needed for an understanding of future work in physiology and dietaries. This course is largely informational. It includes much that is often given under the name of food chemistry, such as a study of such typical substances as eggs, milk, bread, meat, soap, etc. The work includes the testing for preservatives, and the qualitative examination of baking powders and other substances.

We have learned by experience that this minimum requirement of a year and a half in chemistry is best suited to the need of our students. But opportunity is offered for those who will profit by a broader view of the subject to devote a part of their time throughout the four years

to a thorough study of the science. Many students have availed themselves of this opportunity.

Those who elect at the end of the first year to emphasize chemistry in their course, follow in the first half of the second year a course in organic chemistry in which the principles of the science are discussed in some detail Most of the time is devoted to a rather full consideration of the fatty compounds, as this part of organic chemistry is of particular importance to the student of the chemistry of foods. The subject is treated in sufficient detail so that the student will be able to understand the significance of the analytical methods of food analysis which she will meet later. For example, the chemistry of fats and carbohydrates is treated fully, and the student is carried far enough in the chemistry of the proteins to follow the work of Fischer on the polypeptids. The course is essentially pure organic chemistry, although the fact is kept in mind that the students have for their goal the study of foods in their chemical and physiological aspects.

In the second term these students spend seven hours per week learning the elements of quantitative analysis. We are of the opinion that familiarity with the methods of quantitative analysis is a necessary prerequisite of good work in food chemistry. The teacher of this subject who must spend a large share of his time in drilling his students in technique is much hampered. The student, therefore, spends two years preparing herself to take up the study of foods. During this time her mental faculties have been developed, she has gained much useful information, and has learned the use of her tools.

All the time devoted to chemistry in the third year— eight hours per week throughout the year— is given over to the study of foods. Here the standard methods of analysis are studied and attention is given to the quantitative analysis of water and of air. The work includes some qualitative experiments in elementary physiological chemistry. This side of the course is to be developed next year and we hope that the student may gain a more definite conception of the chemical problems involved in metabolism. The work in the course is largely done in the laboratory, but one hour per week is spent in conferences in the class room. Toward the end of the course a definite problem is assigned to each student for solution. These problems are simple, but the reading necessary and the planning of the laboratory work are helpful in developing resourcefulness.

The regular course in chemistry for students of Household Economics ends with the work in the chemistry of foods in the third year.

But a number of those who have completed the work which I have outlined have expressed a desire to continue the study of chemistry in the fourth year, and provision has been made for such students. Opportunity is here offered for the detailed study of some problem in the chemistry of foods. Certain students elect courses in chemistry which are in the regular program of the school of science. One course given in this school is planned to review and amplify the course in inorganic chemistry. Special emphasis is put on the problem of teaching inorganic chemistry to beginners. This course is taken by students of Household Economics who are preparing themselves to teach chemistry in addition to the subjects of their own profession. I believe such a course is of great value to the students and that they should be encouraged to continue the study of chemistry in the fourth year of their work. I also believe that work of a general character which broadens their outlook on chemistry is of infinitely more value than the detailed study of some particular subject which may appear to have a direct bearing on the chemistry of foods. A student who lacks a broad training in chemistry is wasting her time in spending hours on investigating the proteins of wheat, or the constituents of corn oil.

We hope to prepare in such a course teachers of Household Economics who are able to appreciate the bearing of chemistry on their work, who are able to solve the problems as they arise by scientific methods, who are able to keep up with the advances in science which have a bearing on their work, and who are able to teach better as the result of a broad scientific point of view. I do not mean that the teacher thus trained will dispense all her knowledge of science to an unfortunate class of beginners. The more one knows of a subject the more efficiently is that knowledge used. A full knowledge breeds caution. The more one knows the less one frequently teaches, the less the chance of teaching what is wrong. A teacher who has been well trained in chemistry will be able to apply the science in a sane manner in her instruction, and will make the student realize the importance of chemistry and the dignity of the technical subjects in Home Economics. There is, or should be, a demand for teachers of Home Economics, who are well trained in general science and who have what, for a better term, may be called a scientific point of view. I think the day of empirical knowledge is passing and that the colleges are beginning to graduate students who will put the instruction of Home Economics on a higher plane.

In conclusion, let me briefly summarize the opinions which I have

put forward. I believe that in the work in chemistry the mental development of the student is of paramount importance, that the principles of chemistry should be emphasized, and that the many chemical facts related to Household Economics should be taught only as illustrations or applications of these principles. I have also expressed the opinion that we should recognize that Home Economics may be divided into two distinct branches—the scientific and non-scientific— and that we should plan the work for our students with this fact in mind. I have outlined courses which have been adopted as meeting the requirements of those preparing themselves for activity in the two branches indicated. For those who expect to apply chemistry in their future work a thorough training in the science is insisted upon—a training which is received only as the result of the student's devoting an appreciable share of her time throughout three or four years to the study of chemistry. Some may say that I have unduly emphasized the place of chemistry, and that I have placed the standard too high. What's worth doing is worth doing well. If we profess to apply chemistry to Household Economics, let us see to it that we know our chemistry. It is well to aim high anyhow. The arrow will fall as it flies on its course and if we aim a little high we are more apt to hit the mark.

COURSES IN HOME ECONOMICS AS RELATED TO DEPARTMENT OF AGRICULTURE WORK.

JUANITA L. SHEPPERD

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The prime object of a course in Home Economics is to train young women and girls to be home makers. The reason for this is that homemaking is the chosen profession of the great majority of women, and competition in the commercial world is so great as to render it necessary that mothers bear the greater portion of the burden incident to the rearing of children and keeping the home, the father's time being largely consumed with business.

Since there are a few women who wish to enter professional lines, and many who desire to become more proficient in the domestic arts but do not feel that they have time and money for a regular college course, schools of domestic science usually also offer courses which will prepare women for some other vocation in addition to that of homemaking.

As commonly taught in schools, courses in Home Economics have, then, the following objects:

(1) Training women for home-makers; (2) training them for filling administrative positions in institutions where large numbers are housed and fed, and where competent supervisors are needed in providing supplies and preserving sanitary conditions, or for teaching domestic science in city schools, rural schools, and in other secondary schools for girls; (3) fitting them to be teachers in colleges or to be analysts in experiment stations, public health laboratories, etc.

As a preparation for any of these pursuits, the student must be put into possession of such knowledge as will be useful and readily available, not only at the present time, but through life. The perceptive powers must be trained to accuracy and alertness and the judgment and reasoning powers well developed. A person must understand the physical and human forces about him in order to be able to use them in advancing his own interests without infringing upon those of others, and if he hopes to succeed he must be able to do things that are worth while, and do them in a popular yet correct

and scientific manner. The same fundamental knowledge is necessary to all who would attain success in either domestic science or art. Hence, all courses in domestic science or Home Economics should include the same fundamental branches for training mind and hand.

Those who wish to become skilled laborers or business experts along this line take more of the general culture studies, and add much technical knowledge to the fund already acquired. Those who wish to become college professors or analysts must pursue, in addition to those studies taken by the other two classes, a large number of general culture and scientific subjects.

As an illustration of the work now offered along these several lines by a relatively high-grade institution, the courses now offered at the University of Minnesota are given below:

HOME ECONOMICS TRAINING OFFERED BY THE UNIVERSITY OF MINNESOTA.

Agricultural High School Course (School of Agriculture).

FIRST YEAR

First term:		*Second term:*	
Agricultural botany	4[1]	Agricultural botany	5
Drawing	2	English	5
Music	2	Music or literary society work	2
Farm mathematics	5	Comparative physiology	5
Cooking	4	Study of breeds	5
Physical training	2	Laundering	4
Sewing	4	Drawing farm houses	4
Social culture	1	Physical training	2
Field agriculture	3	Farm accounts	4

SECOND YEAR.

First term:		*Second term:*	
English	2	English	2
Agricultural physics	5	Agricultural chemistry	5
Dairy chemistry	2	Dairy husbandry	5
Dairy husbandry	5	Music	2
Fruit growing	3	Agricultural physics	5
Music	2	Vegetable gardening	3
Farm accounts	4	Cooking	4
Cooking	4	Home management	1
Household art	1	Physical training	2
Physical training	2	Sewing	4
Sewing	4		

[1] Hours per week.

THIRD YEAR.

First term:		*Second term:*	
Agricultural chemistry	7	Civics or English	4
Forestry	3	Plant propagation	3
Zoölogy	3	Entomology and insect collection	3
Poultry	3	Algebra[1]	5
Algebra	5	Meats	1
Cooking	4	Home economy	1
Sewing	4	Cooking	6
Music	2	Domestic chemistry	3
Home nursing optional		Sewing	6
		Domestic hygiene	1

NORMAL COURSE IN HOME ECONOMICS.

FIRST YEAR.

First semester:		*Second semester:*	
Advanced rhetoric	3	Advanced rhetoric	3
Principles of teaching	3	Domestic chemistry	6
Field agriculture	3	Vegetable gardening (first half)	3
Agricultural chemistry	6	Plant propagation (last half)	3
Agricultural botany	6	Poultry (last half)	3
Entomology (first half)	3	Meats	2
Elements of domestic science	4	Elements of domestic science	4
Elementary sewing	4	Elementary sewing	4
The family	3	Designs in drafting	4
Domestic science	4	Freehand drawing	4
Position of woman	3	General bacteriology	6
Physical training	2	Domestic hygiene	3
		Bread making	3
		Physical training	2

SECOND YEAR.

First semester:		*Second semester:*	
Domestic science practice teaching	4	Household sanitation	2
The home	3	Methods of domestic science	4
Methods in domestic science	4	Textiles	4
Household art	4	Domestic science practice teaching	4
Fruit growing	3	Methods in domestic science	4
Chemistry of foods	6	Domestic chemistry	4
Industrial education	3	Floriculture	3
Domestic art	3	Nursing and dietetics	3
Domestic service	3	Drawing and designing	4
General elective	3	General elective	3

[1] Required of those intending to enter the College of Agriculture.

FULL COLLEGIATE COURSE IN HOME ECONOMICS.

FRESHMAN YEAR.

First semester:		*Second semester:*	
Science, literature, French or German, economics	23	Science, literature, French or German, economics (elective)	26

SOPHOMORE YEAR.

First semester:		*Second semester;*	
Science, literature, French or German	24	Science, literature, French or German	24
Domestic science	4	Household sanitation	2
The home	3	Bread making	2
Principles of teaching	3	General bacteriology	4

JUNIOR YEAR.

First semester:		*Second semester:*	
Physiology and ecology	6	Physiology and ecology	6
Position of woman	3	Domestic art	6
Advanced designing	6	Domestic science practice teaching	4
Methods in domestic science	4	Analysis of foods	6
Industrial education	3	Farm structures	3
Quantitative chemistry	7	Designing	4
Chemistry of foods	3	Textiles	3
Floriculture	3	General elective	3
General elective	3		

SENIOR YEAR.

First semester:		*Second semester:*	
Domestic service	3	Teachers course	3
Household art	3	Handicraft	3
Domestic science practice teaching	4	Advanced domestic chemistry	3
Farm structures	3	General electives	9
Agricultural elective	3		
General electives	6		

The Junior and Senior electives available include agriculture, agricultural engineering, animal nutrition, botany, dairy husbandry, domestic art, domestic science, drawing and designing, economics, education, entomology, geology, horticulture, psychology, political science and vegetable pathology.

The agricultural high school course prepares women for homemakers, and also gives sufficient knowledge for entering the normal and col-

lege courses. A certificate of graduation is given at the end of the third year. A fourth year in high school work in general academic studies is required of those who have not had general high school training.

Credits in Home Economics for the eight years covered by the high school and the full college work amount to 488 out of a total of 1200. The degree of B.S. is given at the end of the four years' collegiate course.

A few words will serve to make clear the fact that hand and mind are readily trained together and that such a union of physical and mental training enables a student more readily to interpret things in the world about her, and consequently to use and enjoy them much more thoroughly.

The work in the sciences as given in the first two courses does not attempt to cover all the principles of the subjects under discussion, but deals with matter from the housekeeper's standpoint. Both laboratory and lecture room experiments are largely those which have been developed in the class room, and seem to the writer to be of a much more practical nature than those usually found in text books.

The application of many of the principles brought out in the study of physiology and hygiene may be readily demonstrated by the teacher in sewing. Thus, sewing as a fundamental study in a course in domestic science not only gives to a student the elements necessary to needlework in the home, and puts her in possession of such knowledge as will enable her to fashion garments, use colors properly, and select fabrics economically and wisely, but also teaches her that the object of clothing is not merely to adorn the wearer, but that it should first serve hygienic purposes, and afterward be planned to suit individual taste and conform to the requirements of fashion.

Fashion, she learns, should be followed only in such particulars as will cause no infringement on the laws of nature. To serve its legitimate purpose, clothing must permit a circulation of air, skin breathing and free evaporation. It should not only not impede these processes, but should aid in the performance of such normal body functions. When mind and spirit are trained at the same time, students realize that an observance of nature's laws does not prohibit the use of dress as a means of enhancing beauty, but that by the use of right materials and colors, severe outlines can be softened and ugly forms rendered more pleasing. Outward costume may be

very elaborate, but must be considered entirely apart from necessary clothing if it interferes by tightness, weight or imperviousness of material with the function of true clothing.

The students are helped to realize that although men are free-will agents the laws of hygiene cannot be disregarded; on the other hand, they must never lose sight of the fact that the observance of hygienic laws means good health in the ordinary course of events, and that their nonobservance means poor health, that nature's laws are inexorable and that when they are broken, a penalty is unavoidable.

The principles of light and color as taught in physics are so applied that students may have a clearer knowledge of the proper lighting of school or dwelling houses and may be able better to understand the principles underlying combinations of colors and to apply them in matters of dress, housefurnishing and decorating.

In this fundamental course only so much on the subject of textiles is taught as will enable a woman to become sufficiently well acquainted with the economic and esthetic value of the four commonly used materials, cotton, wool, linen, and silk, so that when later she is face to face with such problems she may be able, by observing, thinking and studying, to clothe her family and furnish her house economically tastefully and well. One who wishes to become a business woman, or a teacher in the textile branch of Home Economics, must delve deeper into the subject of textiles, must study the history of dyeing, spinning and weaving, and the methods by which different fibers are combined in making cloth, etc. She must learn to express art more fully in color schemes for rooms, clothing and furniture. In short, she must get a fuller meaning of art and architecture in their application to a beautiful and comfortable home

Man early learned that shelter of some kind is necessary as a protection from inclement weather and from the extremes of heat and cold, but the idea of uniting beauty and utility in house-building did not come until later when civilization was much more advanced. At the present time women who study domestic science realize that a house owned has many advantages over one which is rented, and that either is preferable to keeping house in mere rooms, or to boarding—even though this be under the most favorable circumstances, as in an apartment house or a family hotel.

A detached house gives not only unity and privacy to a family, but the sense of ownership which it may also afford aids in building character in children, for such active and busy creatures are impressed

by their environment and learn much from it. The grass, shrubs, and flowers which a house and lawn or even a house and back yard render possible, give children an idea of nature which they cannot gain from an acquaintance with cut-flowers and greenhouse collections. With such a larger or smaller piece of ground there is often the opportunity to keep domestic animals for pets or profit, and children who have animal pets learn not only to love and respect them, but also acquire a view of domestic animals in their relation to man which is different from that common to children who know only the horse and the dog as seen on the street, and the sheep and cow as their dressed carcasses are displayed in the market, ready to serve as food for man. To children of cities or towns who cannot see the birds, flowers and beasts in their native groves and fields, an educated mother who will properly supervise their reading and will direct their attention in parks, zoölogical gardens, etc. is a blessing.

A course in domestic science aims also to apply general culture studies in a concrete way. For example, mechanical drawing deals with plans for dwelling houses and the subject of home management, which follows it, treats of the proper care of the house as well as with all things in and about it. Thus the ideas gained in architectural drawing find practical application, the impressions given become lasting, and the knowledge is available at any time during life.

It is sometimes said that if the work in kitchens were done by men that part of the house would be reconstructed. We have but to compare some kitchens with the workshops and laboratories of men to be convinced that too little thought is given to planning this, "the heart of the house," the part in which the food necessary to the life and health of the family is prepared.

No woman who is properly trained in domestic science fails to devote thought and energy to home conditions. She may not be able to reconstruct her house, because after a house is built changes are expensive and troublesome, but if such a woman can plan a new house for a home, she will arrange it so that she and all those who assist in the care of it will walk many miles less in doing the kitchen work than do some women. She will see that the kitchen sink, laundry tubs, gaslight, and hooks in the closet are put up with some relation to the height of the occupants of the house, and not of uniform height, as is the general custom. She readily knows that a few inches difference in the height of sinks, tubs, and range makes a difference in the physical and mental attitude of a woman doing housework, because

under proper conditions less energy is required, the muscles are less rigid and the mind more free while performing duties which require that the body be kept for some time in one position.

A glance at proposed outlines of lessons on food will show that although food and nutrition are the special objects of study, sufficient time must be devoted to the subjects of physics, botany, and chemistry to give students a good knowledge of the principles underlying these subjects. The application of general principles to special courses in the teaching of domestic science aids much in securing for it the place which it deserves in the popular estimation of a woman's education.

Applied science can so readily be made to follow pure science and problems bearing on household affairs are so easily arranged that students in all the courses not only enjoy the pure science more because they know that it is soon to be applied in kitchen and laundry, but they have a keener interest in the results of experiments, and a better memory for illustrations used.

In physics, for instance, the principles of solution are so taught that a girl knows why she uses gasoline or benzine, etc., for removing grease from wearing apparel, or kerosene to clean the bearings of her sewing machine. The principles of evaporation and of the diffusion of gases are taught, so that she may know why gasoline is more dangerous at ordinary temperature than kerosene, and why a full lamp or a full can of kerosene could not explode, while one only partly filled might do so, especially after standing in the sunlight or in a warm place.

From the study of capillarity she learns why a lamp-wick should be discarded before it has gotten so short that it will not reach the kerosene, and why it is desirable to keep open the small air-channels at the side of the wick.

From her study of air currents and of heat she learns why her stove smokes on some days and not on others, especially if the top of the chimney is lower than the highest part of the roof; and how the chimney extending to the bottom of the cellar, with an adjustable opening there, may be used to warm the cellar in winter and to freshen the air at any time. She learns why, in general, provisions for a foul-air shaft or vent are important in her home and in the school building.

A knowledge of the fundamental laws of heating and ventilating is of great value to the teacher, and also to the home-maker, because a

child who breathes pure air and is always comfortable is best prepared to receive and retain such knowledge and training as are the ground-work of good citizenship.

In domestic science courses, cookery is put on a scientific basis and thus enlists the powers of many of the best young women who enter the college courses. Attention is given to such subjects as dietary studies of families, cost and value of foods, losses in the cooking and preparation of foods, cereal food products, animal food products, adulterations of foods and their detection; fuels, soaps, dye stuffs and colors, composition of common household utensils, the household water supply, preparation of home-made baking powder, baker's chemicals, composition, food value and characteristics of tea, coffee, chocolate, cocoa, molasses, honey, vinegar and spices, the grading and testing of wheat flour, and the chemistry of bread-making.

The threads of connection between chemistry, physics, etc., and those studies pertaining to domestic science are so knit and woven together as to bring all the studies into one coherent body of interesting facts. Even arithmetic as applied in cooking and sewing ceases to be a dry study, because it is always used in the concrete, and the accuracy necessary in domestic science helps in forming good habits in other classes.

The study of accounts, when applied in domestic science, becomes the handmaid of home economy. Women in general have little idea of business methods, and the knowledge gained in this simple system of bookkeeping helps to strengthen the judgment and render the observation keener and quicker, as well as to form a basis for a system of household accounts which aims to train girls in the right use of money.

In this a study is made of just proportions between expenditure and income, also of a definite proportion to be expended for existence, comfort, and philanthropy. A study of the sources of income and of the purchase of household stores and furnishings, as well as clothing, is considered from the standpoint of the suitable.

The relation of cash and credit to cost is considered, and attention is given to savings and forms of investment, to bank accounts and to the use of a check-book. At the end of the allotted time students are required to submit an account setting forth in detail the use of a certain named income expended for the support of a family for one year, embracing not only every item of necessary home expense, but also an outlay made for travel, luxuries, accident, sickness or other

emergencies. When hand and mind are thus trained together along the entire line of home duties these rise in dignity, and housework ceases to be looked upon as a drudgery. Women thus educated have a sound notion of values in both money and occupation. They realize that the mind is as necessary a tool to successful women as it is to the shrewd business man, and that it must be as constantly used if they will keep their interests active, their tastes perfect, and their impulses effective.

The subject of nutrition is one which must of necessity occupy a large place in any perfect course in domestic science. It is also one in which there are few satisfactory text-books in the English language. Teachers depend for their data largely on special text and reference books, and on the publications of the United States Department of Agriculture, particularly those which have been issued by the Office of Experiment Stations in connection with its nutrition investigations.

THE AMOUNT OF EDIBLE MEAT IN THE VARIOUS CUTS FROM ANIMALS OF KNOWN LIFE HISTORIES.[1]

FLORA HARTLEY GREENE.

The scientific cooking of meat in America is still in its infancy. The methods used have been the ones handed down from the grandmothers, or those devised by unskilled cooks, neither one of which is likely to lead to great advancement.

In its higher development the cooking has followed the English method of developing the flavor inherent in the meat, and this method has been more or less successful because our supply comes from an abundance of well-fed, well-matured animals.

The most extended scientific work on the cooking of meats has been carried on at the University of Illinois. At that institution Prof. H. S. Grindley, with a corps of able assistants, has beenworking since 1904 on some of the problems of cooking meat. He has done much valuable work and obtained some unexpected results, and we may hope for much more in the future from his laboratory.

The work of Professor Grindley indicates that the digestibility of meat is not dependent upon the cut of meat.[2] He finds that a cut of meat from the shoulder digests about as readily and completely as one from the loin, the differences in digestibility being too small to be considered. He also finds that the method of cooking has little effect on the nutritive value of the meat. He says, "In general the various methods of cooking materially modify the appearance, texture, and flavor of the meat, and hence its palatability, but have little effect on the total nutritive value."[3]

If this be true, then one may choose a cut of meat from any place in the animal he wishes and cook it as he pleases, and yet in the end have meat that is equally nutritive and digestible if its composition is the same to begin with.

[1] A thesis presented to the College of Agriculture of the University of Missouri, June, 1909, in partial fulfillment of the requirements for the degree of master of science.

[2] U. S. Dept. Agr., Office of Experiment Stations, Bull. 193, p. 100.

[3] U. S. Dept. Agr., Office of Experiment Stations, Bull. 162, p. 230.

STATEMENT OF THE PROBLEM.

My series of experiments was undertaken with the thought of studying the composition of the different cuts of meat from the housekeeper's standpoint, to determine *what cuts will furnish the most edible meat for a given amount of money.*

These experiments are based entirely upon results obtained by accurate weighings. The cooked meat has not been chemically analyzed and hence the nutritive value of the meat is not here discussed. So far as I have been able to learn from the literature, no one else has attempted this problem.

The opportunity presented was an unusual one for, through the courtesy of the Experiment Station of the University of Missouri, it was made possible for me to secure exactly similar cuts from a series of animals which were being studied in nutrition experiments of the station.

APPARATUS.

The apparatus used in these experiments is all simple and was selected on the basis of adaptability to the purpose.

The oven.—The oven was an ordinary gas range oven, heated by two cylinder burners placed beneath. A wire frame or oven grate was placed on the lowest support in the oven. This raised the bottom of the roasting pan one inch from the bottom of the oven and allowed complete circulation of heated air around the roast. The temperature of the oven was determined by a centigrade thermometer which was inserted into the oven through a small hole in the center of one side of the oven. This brought the bulb of the thermometer to the top and side of the roast. It could be read without opening the oven door.

The Roasting Pan.—The pan used for all the roasts was made of granite iron. It was oval in shape, with a concave bottom, and was 18 by 15 by 3½ in. in dimensions. No cover was used in any of the experiments in roasting, and no water was used with any of the roasts.

The Support.—Several different supports were used in an effort to find one that would hold any roast high enough from the bottom of the pan to escape all drippings, and be easily cleaned of all fat and extractives. The one most used was made from a sheet of brass 12 by 6 in. The four corners were turned sharply down one inch, and the whole of it polished very smooth. Such a piece in porcelain would be much better.

The Braising Kettle.—An old fashioned six quart brass kettle was used for the braising. It was found very satisfactory because it could be heated very hot in searing the roast at the beginning of the experiment, and its thick walls made it easy to keep a constant temperature. A close-fitting tin lid with a hole for the insertion of the thermometer covered it.

The Boiling Kettle.—The boiling kettle was one of ordinary granite iron with a fitted lid. The lid was perforated for the thermometer.

The Thermometers.—The thermometers used were ordinary glass rod Centigrades. The one used for internal meat temperature was calibrated to read 100°. This gave wide spaces and brought the point to be read above the surface of the thick roasts.

The Balance.—The balance used was an ordinary spring torsion and the weights were of brass and read to one gram.

THE CUTS OF MEAT USED.

(1) *Beef Loaf.*—The beef loaves were of two kinds, ground meat from the neck and chuck, and ground meat from the flank and plate.

(2) *Boiling Pieces.*—These pieces were the plate pieces that are cut from the ends of rib roasts and consequently varied with the rib roasts.

(3) *Round Roast or Braise.*—This roast was made from the entire large muscle on the outside of the upper end of the round cut. It is what is usually spoken of as the tough side, and was cut about three inches thick.

(4) *Rib Roast.*—The rib roasts used were cut the standing length and included the sixth and seventh ribs and the eleventh and twelfth ribs, counting from the head backward. The cuts were made exactly between the adjoining ribs. Each roast was completely boned, rolled, and tied ready for roasting by the butcher.

(5) *Porter House Steaks.*—These were cut thick and were the cut just forward of the porter house roast.

(6) *Porter House Roast.*—These roasts included the last two vertebrae of porter house cut and were cut short and not boned.

METHODS OF COOKING.

Beef Loaf.—The meat was ground quite fine and then thoroughly mixed with weighed amounts of different condiments and materials

for retaining within the loaf its juice and fat. Egg, cracker crumbs, salt, pepper, sage and cloves were used in the different loaves. An effort was made to retain all the juice of the meat and just as much fat as possible and still make the loaf the most palatable. After mixing, the loaf was rubbed smooth over the outside and placed on the support in the roasting pan. The meat was placed in the oven when it registered 250° C. The oven was held at that temperature for fifteen minutes, when the fire was turned off and the oven cooled slowly till it reached 175°. The fire was then re-lighted and the oven kept at 175° until the internal temperature of the loaf was 65°. The loaf was then weighed and served. The fat dripping was weighed; the pan and support carefully washed to remove all extractives, the wash water then being analyzed to determine the nitrogen content. The weight of added condiments and crackers was deducted from the weight of the cooked loaf, and the result was called edible meat. The dripping was called waste fat. The material left in the pan other than fat dripping was called extractives.

No water was used in roasting any of the meats and no cover was used on the roasting pan.

Boiling Pieces or Stews.—The boiling pieces used in these experiments were from the navel end of the plate, and two methods were used in their preparation. The meat was cut into pieces of a suitable size for stewing, and excessive fat was removed and considered as waste fat. The meat was placed in a granite iron kettle with a closely fitting lid. A small but measured amount of boiling water was added and a thermometer inserted. The amount of water varied with the amount of meat and the size of the kettle, but the effort was to use just as little water as possible. After adding the water the meat was kept over the hot flame until the whole mass was just boiling, which was in from three to five minutes. The kettle was then placed over the "simmerer" and kept at 85° C. until the meat was tender. This required from six to ten hours. The meat was then thoroughly drained, and the bone removed and weighed. The excess fat was cut away and all the waste or inedible material removed and weighed. In one method, the edible meat was weighed and served as boiled meat, meat pie, various stews, and as hash or croquettes. The liquid in the kettle was chilled, and the fat removed. The remaining liquid was analyzed for nitrogen content.

Others of these boiling pieces were cooked until they were very tender and could be easily pulled into bits. The excess fat and wastes

of all kinds were removed and the edible meat was shredded. Condiments of various kinds were added and the liquor remaining in the kettle was poured over it and the whole placed to harden under pressure. The result was a very tasty bit of cold meat, with a larger percentage of fat embodied in it than in the boiling pieces cooked by the preceding method.

Braised Round.—A small bit of fat was cut from the round and tried out in a brass kettle. If the round did not have enough fat for this purpose, 20 gms. of fresh lard was added. The round was placed in the kettle and turned over and around until it was well seared all over. A small support was then placed in the bottom of the kettle to allow circulation of water underneath the meat. A weighed amount of boiling water was then added, as small in amount as possible, to keep the meat from burning. The kettle was then placed over the "simmerer" and kept at 85° C. until the meat was tender.

For braised meat to be best it should be cooked in this manner, but also have vegetables or wine and spices added to the water. These were all omitted in these experiments because they would have made the determination of actual weight of edible meat more complicated.

This method of cooking meat has been in use for hundreds of years. The earlier and perhaps better method was to have a cup-shaped lid for the pot. Into this lid hot coals were placed, so that the top of the meat was browned while the lower part was kept in water.

Rolled Rib Roast.—The rolled rib roasts were placed on a support that held it above all possible drippings in the bottom of the pan, and so that the part of the outside having the most fat should be at the top. This insured a continuous basting of the roast with its own fat and without any further thought from the experimenter.

The roast was placed in the oven when the temperature was 250° C. It was there held for 15 to 20 minutes, depending upon the size of the roast. The heat was then turned off and the oven cooled gradually to 175°. The fire was then lighted again and the temperature was held at 175° until the internal temperature of the roast was 65°. This temperature was determined by thrusting a thermometer down through the top of the roast to its center in the thickest portion. When the internal temperature had reached the desired degree the roast was removed from the oven, and the pan, support, meat, drippings and all were weighed. The roast was then removed from the pan and placed on a platter for serving. The drippings in the pan were weighed and recorded as waste fat. The pan and support were

washed with measured amounts of hot water and this water was analyzed for nitrogen content. The roast was cut into suitable pieces for serving, all excess fat weighed as waste fat, and the meat then served. All bits of fat or connective tissue left on the plate were collected, assorted and weighed as waste fat, or miscellaneous waste. The weight of all this waste fat, miscellaneous waste, strings, skewres, etc., was deducted from the weight of the meat just from the oven in order to obtain the amount of edible meat.

No water was used in this roasting and the meat was not basted.

Porter House Roast—The porter house roast and the standing rib roasts were cooked in exactly the same way as the rolled rib roast, except that the bone was not removed. The roasts were placed on the support in the roasting pan with the fat or skin side on top. In a very thin animal the leaf fat was removed from the inside of the cut and placed on top of the roast and fastened there with wooden skewers. This insured the necessary basting with its own fat.

The roast was weighed, carved and reweighed in exactly the same manner as the rib roasts.

Porter House S eak.—These steaks were placed on an ordinary grill which was heated from above. When the broiling oven was 280° C. the grill was run under the flame and quite close to it. It was allowed to remain here until the meat was well seared, then the steak was reversed and seared on the other side. This was continued until the internal temperature of the steak registered 60° C. The steaks were weighed and served just as were the roasts. The fat remain ng in the dripping pan was weighed as waste fat, though its weight is not considered of great accuracy, as the amount of fat burned during the broiling unavoidably varied considerably.

HISTORY OF THE ANIMALS USED.

Meat from five animals was used in the tests. No. *504* was a high grade Hereford steer, twenty months old when slaughtered. No. *48* was a Shorthorn grade steer about four and a-half years old. A butcher would class him as "choice but rather too fat for anything but the choicest city market." No. *63* was a full-blooded Jersey cow, six years old. She had been fed a maintenance milch cow's ration all the time, but had been without milk for three months before slaughtering. She would be classed in the trade as a "poor cutter."

The fourth animal was a high grade Hereford steer designated "J,"

fed for the show ring. His diet was constantly changed so as to tempt him and make him eat as much as possible. He was given all kinds of food from brown sugar and breakfast food to oats and corn. Every effort was made to make and keep him just as large as possible, yet not make him rough. He would be classified in the market as an "extra choice," but he was too fat for the ordinary trade.

A pure blood Galloway steer designated "B," fed for the show ring, was also used. When slaughtered he was about three years old. His ration was a varied one, planned to make him eat as much as possible. He would sell in the market as "choice."

RESULTS OF COOKING TESTS.

The average results from the entire series of experiments are presented in tabular form below:

TABLE I.

Average percentage of edible meat, wastes in cooking, and cost per pound of different cuts from all the animals used.

KIND OF MEAT.	FAT WASTE.	BONE WASTE.	WATER LOSS.	EDIBLE MEAT.	COST OF EDIBLE MEAT PER POUND.
	Per Cent.	*Per Cent.*	*Per Cent.*	*Per Cent.*	*Cents.*
Beef loaf	11.8	——	13.2	72.9	20.6
Braised round	——	——	14.4	61.4	24.4
Boiled rib	38.2	9.1	——	36.5	27.5
Rib roast	24.4	20.5	10.2	41.6	37.5
Porter house roast	34.0	15.7	7.8	41.2	61.1
Porter house steak	24.8	13.9	13.	42.2	63.3
Average per unit weight	....	....	....	50.0	39.0

PRICES OF MEAT.

The prices used as a basis for computation in this paper are the prices that obtained in the local retail markets in Columbia, Mo., during the month of March, 1909, as follows: round steak 15 cts. per pound; porter-house steak, 25 cts.; porter-house roast, cut short, 25 cts.; standing rib roast, 15 cts.; rolled rib roast, 15 cts.; plate, navel end, 10 cts.; and beef loaf, 15 cts.

The price per pound of waste fat as here used is 6 cts. This is not the market value, but it is believed to be worth this amount to the housewife who uses waste fat in different ways in cooking and for soap making. To obtain the item called "value of edible meat," the value of the waste fat from any pound of meat as purchased from the butcher is allowed for in deducing the cost price of every pound of edible meat.

DISCUSSION OF DATA.

From the above table it will be seen that the grand total per unit of weight of all the animals is 50 per cent of edible meat valued at 39 cts. per pound.

The highest percentage of edible meat, 72.9, is found in the beef loaf. Here the loss in fat is 11.8 per cent and the loss in evaporation in cooking 13.2 per cent. The cost per pound of edible meat becomes 20.6 cts. or 5.6 cts. per pound more than the price paid the butcher.

The braised round meat gives 61.4 per cent of edible meat, with a water loss of 14.4 per cent. There was no loss in fat, as it was all incorporated in the sauce made from the broth. The cost of the edible meat was 24.4 cts. per pound which is an increase of 9.4 cts. per pound over the butcher's price.

The boiled rib ends averaged 36.5 per cent of edible meat, 38.2 per cent of waste fat, and 20.5 per cent of bone. This makes the price 27.5 cts. for a pound of edible meat that cost only 10 cts. at the shop.

The five rib roasts averaged 41.6 per cent of edible meat, 24.4 per cent of fat, 20.5 per cent of bone, and 10.2 per cent loss in water. The butcher's price of 15 cts. per pound is increased to 37.5 cts. for a pound of edible meat.

The porter house roast contained 41.2 per cent of edible meat, 34 per cent of waste fat, and 15.7 per cent of bone, and lost 7.8 per cent of water in cooking. As compared with the rib roasts, the edible meat is approximately the same. The rib roasts lose much in bone and the porter house loses excessively in waste fat.

The cost of the porter house is increased from 25 cts. for the butcher's pound to 61.1 cts. for a pound of edible meat.

The value of the porter house steaks correspond to that of the porter house roasts very closely. They lost more in water evaporation, which may have been due to the fact that the broiler was so arranged that the fat which was tried out did not baste the sides, thus leaving two large lean surfaces exposed for evaporation. They

lost less in waste fat, which may have been due to the fact that the broiled fat is more palatable, hence more of it eaten than in the roast.

COMPARATIVE LOSSES IN DIFFERENT TYPES OF ANIMALS.

With a view to comparing the losses in cooking and relative value of the different cuts in diverse types of animals, Tables 2 and 3 are presented below:

TABLE II.

Percentage of edible meat, waste fat, bone and water, and cost per pound of all cuts in animal No. 63, presented as a type of the poorer grade of beef.

KIND OF MEAT.	BUTCHER'S WEIGHT.	WASTE FAT.	WASTE BONE.	WATER LOSS.	EDIBLE MEAT.	COST OF EDIBLE MEAT PER POUND.
	Gms.	*Per Cent.*	*Per Cent.*	*Per Cent.*	*Per Cent.*	*Cents.*
Beef loaf	1185	0.4	—	16.8	82.7	18.0
Braised round	1070	—	—	16.0	59.3	25.3
Boiled rib	1454	2.8	22.5	17.7	57.9	17.3
Rib roast	4385	13.0	39.7	7.5	38.1	39.0
Porter house roast	1475	14.9	16.6	9.5	51.6	48.0
Porter house steak	465	—	21.5	12.3	53.8	46.2
Average per unit weight	....	....	....	....	57.2	30.6

TABLE III.

Percentage of edible meat, waste fat, bone, and water, and cost per pound of all the cuts from the high-grade Hereford steer "J," a type of the best or extra choice beef.

KIND OF MEAT.	BUTCHER'S WEIGHT.	WASTE FAT.	WASTE BONE.	WATER LOSS.	EDIBLE MEAT.	COST OF EDIBLE MEAT PER LB.
	Gms.	*Per Cent.*	*Per Cent.*	*Per Cent.*	*Per Cent.*	*Cents.*
Beef loaf[a]	1000	6.5	—	13.0	75.2	19.9
Braised round	2110	—	—	6.2	65.8	22.8
Boiled rib	3779	53.0	6.2	—	29.2	34.2
Rib roast	9161	41.2	11.7	9.9	32.3	46.0
Porter house roast	4862	50.9	7.3	6.4	35.6	70.0
Porter house steak	1845	50.0	4.8	7.9	36.6	68.3
Average per unit weight	....	....	....	....	45.8	43.7

a Made from rib lean from which all gross fat had been removed.

Tables 2 and 3 represent the two extreme animals in the series of experiments. Table 2 gives the value in percentage of the different cuts of the cow No. *63*, the edible meat, waste fat, bone, and water, and the cost per pound of the edible meat. It is interesting to note that the highest percentage of edible meat of all the cuts is found in the beef loaf of this animal (82.7 per cent), and it has the low actual value of 18 cts. per pound. The braised round furnishes 59.3 per cent of edible meat at 25.3 cents per pound. Boiled rib gives 57.9 per cent of edible meat and costs 17.3 cts. per pound. The rib roast gives only 38.1 per cent of edible meat. This small amount of edible meat in the rib roast is caused by the large percentage of bone waste, *i.e.*, 39.7 per cent. The amount lost by evaporation is very small. This is probably due to the fact that the meat was so rolled as to make the skin fat completely surround the roast. It was then so placed in the pan that the fattest part was above and the fat in trying out basted the exposed sides and prevented evaporation.

The porter house roast lost little by evaporation. As previously explained, the kidney fat of this roast was fastened on top of the roast. The percentage of edible meat is higher than in the rib roast, and the weight of bone much less. This is an interesting point because in all the cuts, except those from the loin, the cow No. *63* has a proportionately larger percentage of bone. This may possibly be due to skeletal differences based on breed or sex. The average per unit of weight of edible meat in No. *63* is 57.2 per cent, with an average value of 30.6 cts. per pound of edible meat.

Table 3 gives the percentages for the high grade Hereford steer "J." The beef loaf gives 75.2 per cent of edible meat, but this cannot be fairly compared with other animals since this loaf was made from a rib cut from which all visible fat had been removed. It does show that there was a higher percentage of fat included in the muscle alone of the steer than was present in all the fat of the neck and chuck of No. *63*.

The steer gave a higher percentage of edible meat in the braised round (65.8 per cent) than did No. *63* (59.3 per cent). This may be due either to the presence of more fat in the flesh of this steer or to less loss in moisture.

All the remaining cuts from this steer lost very heavily in waste fat, the least loss being in rib roast (41.2 per cent), and the greatest being in porter house roast (50.9 per cent).

The average price per unit of weight of the meat from this steer is 43.7 cts. per pound of edible meat, which forms 45.8 per cent of each pound. This was 13.1 cts. per pound more than the corresponding value for the cow, and 4.7 cts. more than the average for all the animals.

This series of experiments is closed with the feeling that there is yet much more to be done on this problem. Many interesting and suggestive side lines of work have been observed during the study. It is hoped that they may be investigated in the future, and that the present problem may be further extended.

SUMMARY AND CONCLUSIONS.

The conclusions here recorded are based on a study of forty-one cuts taken from five different animals.

(1) The highest percentage of edible meat was obtained from the beef loaf. Loaf made from neck and chuck was a cent or two cheaper than that made from plate and flank.

(2) The amount of waste fat was small in the beef loaf, because a large amount of it was held in the loaf by the added ingredients, making the fat become edible meat. This made the total cost per pound of edible meat lower than in any other cut, even at the same price for the butcher's weight.

(3) Braised round is an inexpensive meat with practically no loss except that of evaporation. It costs only a few cents more per pound than beef loaf.

(4) Boiled rib end is usually an expensive meat because a large percentage is lost in wasteful fat. The finished product is not so desirable, from the housekeeper's standpoint, as that of other cuts. All of its possibilities are found in the round and at less expenditure of money and time.

(5) Rib roast gives a fair share of fine meat at an average price. The indications are that the amount of loss in waste fat increases as the cut approaches the loin. The chuck rib roast will possibly yield the highest percentage of edible meat, but the quality of the meat may not be so good. The best rib roasts as to juiciness were those made from the eleventh and twelfth ribs.

(6) Porter house, either as roast or as steak, is a most expensive meat, largely because of its usual excessive loss in waste fat.

(7) The loss by evaporation is greatest in lean meats and least in excessively fat meats. It is also greater in small cuts than in large ones.

(8) Long cooking increases the loss in evaporation of water and in the loss of fat.

(9) The fatter the animal the lower the percentage of loss in bone. An apparent exception to this rule exists in the loin cuts from the lean cow, No. *63*, when compared with the fat steers. This is probably due to skeletal differences based on sex or breed.

(10) Bone loses weight in cooking. The percentage of bone in the standing rib roasts, roasted with the bone left in, is not so high as that originally in the rolled rib roasts which were boned before roasting. It was not determined whether this is due to water loss only, or whether other substances also are lost to the meat from the bone in cooking.

(11) The juiciness of the roast seems to be directly proportioned to the amount of fat it contains.

(12) The fat roasts of this series are of higher flavor than the lean roasts.

BIBLIOGRAPHY.

Chemistry of Cooking, W. Mathew Williams; *Food and Feeding*, Sir Henry Thompson; *The Spirit of Cooking*, J. L. W. Thudichum; *Food in Health and Disease*, Birney Zeo; *Virginia Housewife*, Randolph; *Rumford's Kitchen Leaflets*; *Renovation of Food to Health*, Townsend; *Food and Dietetics*, Hutchinson; *Gastronomy as a Fine Art*, Brillat-Savarin; *Losses in Cooking Meat*, United States Department of Agriculture, Office of Experiment Stations, Bull. 102; *Influence of Cooking on the Nutritive Value of Meats*, United States Department of Agriculture, Office of Experiment Stations, Bull. 162; *Effect of Cooking upon Digestion of Meat*, United States Department of Agriculture, Office of Experiment Stations, Bull. 193; *Meat Supply and Surplus*, United States Department of Agriculture, Bureau of Statistics, Bull. 55; *Roasting of Beef*, Illinois Agricultural Experiment Station Circular 71.

GRADUATE SCHOOL OF HOME ECONOMICS.

The third Graduate School of Home Economics was held at Ames, Iowa, July 6-20, 1910. As was the case with earlier sessions, the date was selected so that it would fall within the period covered by the Graduate School of Agriculture in order that advantage might be taken of the numerous courses offered which would interest Home Economics workers. The usual arrangements were made so that attendants at either school could have the benefit of the work of the other.

The program of the school follows:

Wednesday, July 6.

2–3 p. m.—Lecture, Miss Caroline L. Hunt, Office of Experiment Stations, U. S. Department of Agriculture, The Scientific Basis of Progressive Legislation Affecting Welfare of the Home.

Evening.—Joint meeting with the Graduate School of Agriculture.

Thursday, July 7.

11–12 a. m.—Dr. Chas. E. Marshall, Professor of Bacteriology and Hygiene, Michigan Agricultural College, A Review of Intestinal Bacteriology.

2–3 p. m.—Dr. R. E. Buchanan, Professor of Bacteriology, Iowa State College, Bacteria in Relation to Food Poisoning.

8 p. m.—Formal Opening, Address of Welcome, Dean C. F. Curtiss, Iowa State College, Address by Director A. C. True, Office of Experiment Stations, U. S. Department of Agriculture, Educational Problems in Home Economics, Addresses by President H. J. Waters, Kansas State Agricultural College, and Mrs. Alice D. Feuling.

Friday, July 8.

11–12 a. m.—Dr. W. A. McKeever, Professor of Philosophy, Kansas State Agricultural College, Improving the Crop of Children.

2–3 p. m.—Dr. McKeever, Eugenics.

Evening.—Joint meeting with the Graduate School of Agriculture.

Monday, July 11.

11–12 a. m.—Prof. M. Mortensen, Iowa State College, Classification of Ice Creams.

2–3 p. m.—Miss Elizabeth C. Sprague, University of Chicago, The Causes of Flavor in Meat. (A report of the results of original investigation.)

Tuesday, July 12.

11–12 a. m.—Miss Hunt, The Scientific Basis of the Campaign against Flies.

2–3 p. m.—Dr. H. T. Vulte, Professor of Household Chemistry, Teachers College, Columbia University, Chemistry of Textiles. (First lecture.)

Wednesday, July 13.

11–12 a. m.—Dr. B. H. Hibbard, Cost of Living on the Farm.

2–3 p. m.—Dr. Vulte, Chemistry of Textiles. (Second lecture.)

Thursday, July 14.

9.30–10.30 a. m.—Prof. Mortensen, Ice Cream Manufacture.

11–12 a. m.—Dr. B. H. Hibbard, Cost of Living on the Farm. (Second lecture.)

2–3 p. m.—Dr. Vulte, Chemistry of Textiles. (Third lecture.)

Friday, July 15.

9.30–10.30 a. m.—Dr. C. F. Langworthy, Expert in Nutrition, Office of Experiment Stations, U. S. Department of Agriculture, Report of Literature on the Physiology and Chemistry of Fatigue, with Suggestions as to the Possible Use of the Calorimeter in Further Research on the Subject.

2–3 p. m.—Dr. Vulte, Chemistry of Textiles. (Fourth lecture.)

Monday, July 18.

8–9 a. m.—Dr. Langworthy, A Review of the Scientific Literature on Domestic Art.

3–4 p. m.—Prof. C. H. Eckles, University of Missouri, Recent Advances in Dairy Bacteriology.

Tuesday, July 19.

8–9 a. m.—Dr. Langworthy, Question Box.

3–4 p. m.—Dr. Langworthy, Table Customs.

Several conferences were also arranged, one led by Miss Sprague on Exact Methods in Cooking, another led by Mrs. Feuling on New Household Devices, and one which was very largely attended at which Dr. F. L. Stevens of the North Carolina College of Agriculture spoke on Adapting General Text-Books to the Use of Rural Schools.

The committee appointed at the business meeting which terminated the Graduate School of Home Economics at Ithaca, 1908, and which had charge of the arrangements for the Graduate School at Ames, comprised Mrs. Ellen H. Richards, Miss Caroline L. Hunt, Mrs. Alice P. Norton, Miss Edna D. Day, Miss Abby L. Marlatt, Miss Martha Van Rensselaer, and Dr. C. F. Langworthy, with Miss Day as chairman. At the request of the committee Miss Caroline L. Hunt consented to go to Ames as Dean of the Graduate School of Home Economics.

The success of the school is in large measure due to Miss Hunt and to Miss Day, who had charge of the arrangement of courses and other preliminary work. Owing without doubt to unavoidable delays in completing arrangements for the Graduate School, the attendance was not quite so large as at the Ithaca meeting but much enthusiasm was manifested and it is believed that it will exercise a decided influence as a factor in advancing Home Economics work.

It is interesting to note that funds, which included a small balance from the preceding session of the Graduate School, a generous contribution from the Iowa State College, and fees from pupils in attendance, were amply sufficient for meeting all the expenses of the school.

The final business meeting of the school was held on Tuesday, July 19, with Miss Hunt in the chair. The principal subject for discussion was the future of the Graduate School of Home Economics. In view of the fact that the agricultural colleges constitute the largest group of institutions of collegiate grade giving courses in Home Economics, it seems very fitting that the biennial Graduate School of Agriculture should include courses in this subject as well as in the other branches taught in the agricultural college. Should such an arrangement prove feasible, an opportunity would be provided for graduate work in Home Economics at regular intervals. It would not then be necessary to continue the Graduate School of Home Economics along its present lines as an independent enterprise, as all the advantages gained by the present coöperation with the Graduate School of Agriculture would of course be secured. Accordingly, the following resolution was adopted and submitted to the Association of Agricultural Colleges and Experiment Stations, to be referred to the committee for the Graduate School of Agriculture in charge:

"Inasmuch as the agricultural colleges constitute the largest group of collegiate grade in the United States giving courses in Home Economics, we, the Graduate School of Home Economics, request that in planning the work in the future, the Graduate School of Agriculture offer a section of Home Economics that the needs of the women students be as fully met as those of the men.

"The Graduate School of Home Economics, after several years of separate organization, has become a part of the American Home Economics Association, and can assure the Graduate School of Agriculture that the American Association of Home Economics will coöperate in every way and will work for the benefit of the Home Economics section which we hope may be formed."

As there was no way of knowing whether or not the Association of Agricultural Colleges and Experiment Stations would find it possible to follow out the plan suggested, it was deemed advisable to make arrangements for the continuance of the Graduate School of Home Economics under other circumstances if necessary, and with this in view it was voted that it be formally taken over by the American Home Economics Association and become in reality what it has been in effect, a part of that organization. In order that provision might be made for all contingencies, the permanent committee for the Graduate School of Home Economics was continued, the former members being re-ëlected, with the addition of Mr. Alice Dynes Feuling as chairman of the committee, the full list of names being as follows: Mrs. Ellen H. Richards, Miss Caroline L. Hunt, Mrs. Alice P. Norton, Miss Edna D. Day, Miss Abby L. Marlatt, Miss Martha Van Rensselaer, Dr. C. F. Langworthy, and Mrs. Alice Dynes Feuling.

The Chairman spoke of the indebtedness of the present session to the many who helped to make the Ames meeting successful, and the following resolution thanking the Graduate School of Agriculture, the Iowa State College, and others who had contributed to the success of the meeting, was adopted:

"The Graduate School of Home Economics in closing its s ssion at Ames from July 6–19 [1910], wishes to express its profound appreciation to the Iowa State College and its faculty, particularly to the Department of Home Economics, to the Iowa Experiment Station, its dean and staff; to the Graduate School of Agriculture, its dean and faculty; to the Priscilla clubs and others who have so measurably contributed to our comfort socially; and to those managers of the excursion to Odebolt and the surrounding region, and to the many who so loyally served us throughout the day.

"We further wish to thank Miss Hunt for her services as dean of the Graduate School of Home Economics and to all lecturers and instructors who have contributed toward the success of the school."

The meeting then adjourned and this business meeting closed the Graduate School of Home Economics.

SECTIONAL CONFERENCE ON HOUSEHOLD AND INSTITUTIONAL MANAGEMENT.

Following an invitation from the Lake Placid Club, an important conference of members of the American Home Economics Association engaged in household and institutional administration, or in related teaching fields, was held at the Lake Placid Club, Essex County, New York, from Tuesday June 28 to Saturday, July 2, 1910

The formal program for the conference was announced in full in the June number of the JOURNAL.

At a business session held on the closing day, the following were chosen as an executive committee: Mrs. Melvil Dewey, Lake Placid Club, Essex Co., N. Y., chairman; Miss Adelaide Nutting, Teachers College, Columbia Univ., New York City; Prof. Wm. Morse Cole, Harvard University, Cambridge, Mass.; Miss Martha Van Rensselaer, Cornell University, Ithaca, N. Y.; and Melvil Dewey, Pres. Lake Placid Club, Essex Co., N. Y.

Committees were also appointed, as follows:

On Existing Demands in Institution Work, Miss Martha Van Rensselaer, chairman; Administration, Mrs. Melvil Dewey, chairman; Curriculum for Training for Institution Management, Miss Lydia Southard, Teachers College chairman, and Miss Florence Corbett, Teachers College; and Resolutions, Dr. Benjamin R. Andrews, Teachers College, Miss Maude Gilchrist, Mich. Agricultural College, and Mrs. Olaf N. Guldin, chairman Home Economics Department, General Federation of Women's Clubs, Fort Wayne, Ind.

Among the resolutions reported by the Resolutions Committee and adopted were the following:

(1) It is significant that this first conference should meet at the same place and under the same auspices as the first conference on Home Economics a decade ago. We congratulate Mr. and Mrs. Dewey on their services to the cause, and we hereby express our appreciation of their great contribution to the work.

(2) (*a*) That the conference emphasize the ideals of rational living in home, institution and community life; (*b*) that we utilize all proper methods to advance these ideals in education in both elementary and higher schools; (*c*) that we urge the necessity of a professional training for those concerned in household and institution management; (*d*) that we work for increased government support

of scientific investigation in this field, and a similar provision in universities and technical schools; (*e*) that we arrange for the preparation and dissemination of needed literature on institution management; (*f*) that we organize and assist meetings and conferences where these subjects are considered, so that the public may realize their importance as a basis of conservation of human life, as well as of material resources.

(3) That the conference records its conviction of the great importance of sectional conferences like this dealing with definite divisions of Home Economics as well as the general meetings whose programs include the whole field of Home Economics, and that we request the committee on institution management to arrange for a conference in 1911.

(4) That we express our appreciation of the great value of the JOURNAL OF HOME ECONOMICS, and urge our members to extend its circulation among institutions, libraries, clubs and individuals who will find it valuable as the authoritative publication in the field of home and institution management.

That the executive committee of the American Home Economics Association be requested to consider the possibility of adding some supplementary phrase on the title page of the JOURNAL which shall express its relation to the institutional field—for example, "JOURNAL OF HOME ECONOMICS—Home, Institution, Community."

(5) That the conference approves the proposed federal legislation providing national support for education in Home Economics; specially that we urge favorable action by congress on the Davis-Dolliver Bill which will extend support to secondary and normal education in Home Economics.

(6) That the executive board of the section be authorized in the interval between its meetings to act on any matter which four-fifths of the board agree shall not be postponed till the next meeting, and where the action proposed correctly represents the majority sentiment of the section.

(7) Resolved that the members of this conference express their sense of loss in the death of Mrs. Adelaide Hoodless who so long and ably promoted the cause of Home Economics education in Canada.

HOME ECONOMICS AT THE GENERAL FEDERATION OF WOMEN'S CLUBS.

At the tenth biennial convention of the General Federation of Women's Clubs, held in Cincinnati, May 11–18, the chairman of of the standing committee of Home Economics, Mrs. Olaf Guldin, of Fort Wayne, Indiana, reported that 720 clubs had held one or more special sessions on Home Economics during the two years, that 371 had regularly established departments of Home Economics, 278 had had lectures, demonstrations or short courses, and 258 helped in creating sentiment toward Home Economics in the public schools, while 104 had done educational or philanthropic work in cities.

The committee made the following requests of clubs:

(1) To have each club devote one or more sessions to Home Economics; (2) to have Home Economics books put into the public schools; (3) to have Home Economics taught in the public schools; (4) to have one session of each convention devoted to the subject; (5) to coöperate with state universities and agricultural colleges to secure Home Economics teachers for carrying on short course work and lectures; and (6) to keep this committee informed by reports, programs and outlines on whatever is accomplished.

Miss Crooks, of Milwaukee-Downer College, gave a lecture upon textiles, illustrating by samples the work of laboratory investigation of adulterated fabrics. Miss Crooks made a plea for the same attention to the regulation of the sale of textiles which has been secured for food adulteration. Miss Mary F. Rausch, of the Colorado Agricultural College, presented a paper on Domestic Science, and also explained the scope of the extension work in Colorado. Miss Martha Van Rensselaer, of Cornell University, gave a steropticon lecture on the field of Home Economics, using a series of slides to show the work presented in the institutions of the country.

Throughout the entire meeting of the Federation lectures and discussions relating to Home Economics were presented by different committees. The food sanitation committee introduced Dr. Harvey W. Wiley, of the U.S. Department of Agriculture, and health commissioners from several central states. The art committee had a lecture on practical application of art principles to domestic and municipal life. Dr. Alvin Davison, of Lafayette College, spoke on the Drinking Cup as a Source of Disease. Social Hygiene and the Economic Conditions Governing the Condition of Women and Children formed a part of another session.

EDITORIALS.

We wish to call attention to the special feature of this number, the papers on the teaching of Domestic Art which were presented for the most part at the Boston Meeting of the Education Section. Other papers will appear in the next number. This is the fulfillment of our promise made in the spring to those teachers and students interested in this branch of Home Economics, and we are certain that in the number and excellence of these papers and discussion they will find their reward for the delay. It is hoped that these papers will stimulate discussion on this important subject and we shall be glad to receive additional papers and criticisms.

The Future of the Association.

The American Home Economics Association may congratulate itself that in this, the second year of its existence, it has held nearly all of those who joined its ranks in 1909 and has added to its membership over three hundred new names. This has been done without advertising or other effort except what has been put forth by interested members.

The Association and its organ, the *Journal of Home Economics*, has thus far existed almost solely for the development and instruction of its members, a large part of them teachers of Home Economics in our schools. Through their conventions and summer schools and lecture courses the Association has become known to teachers of these branches, but outside this natural means of communication it has not been easy to spread the news that a national association has been formed "to improve the conditions of living in the home, the institutional household and the community." Homemakers, workers in institutions, friendly visitors among the poor, when shown a copy of the *Journal* are often heard to express surprise and pleasure to learn that such help is at hand. The Association is meeting a great modern need, its *Journal* voices an irresistible movement which calls for "teaching the practical efficiencies of living to both sexes."

That the Association should rightly lead this movement is of immense importance and how it is to do so has been made the subject

of careful thought by our governing council. In the first place its membership must be greatly extended. Our main reliance in bringing this about must continue to be those who are already interested in its aims, but in order to reach the larger reading public a campaign of publicity must be undertaken which will require larger funds than our membership dues furnish. The Council has decided to admit into the pages of the *Journal* a moderate amount of carefully selected advertising and it is hoped that the income derived from this source will also make it possible to issue the *Journal* more frequently, probably as a monthly with the exception of the vacation months and give to its readers some eight hundred instead of, as now, five hundred pages of reading matter yearly. The dues will continue to be $2.00 a year and will be received for the calendar year only.

Back Numbers.

We wish to thank most heartily those of our members who have responded to our call in the June number for Nos. 1 and 2 of Volume I. Cash or credit has been given in all cases, except a few in which the *Journal* was unaccompanied by name. We need still more copies of these numbers especially to fill the orders from libraries for complete sets.

Title Page and Index.

Readers of the *Journal* will please note that accompanying this number we send title page and index for Volume I, 1909. The Index for Volume II will be printed with the December number.

The Summer Meetings.

During the summer three notable meetings were held at which papers were presented of great interest to our members. The first of these meetings was held at Lake Placid, N. Y., June 28 to July 2, on Institutional Management, and it called together some fifty people, many of them heads of institutions, dietitians, or others who had expert knowledge of the subjects discussed. So important and numerous were the papers presented that it has been decided to issue them in a special "Institutions Number" which will appear in November and be sent free to all members of the Association. Lists of the officers chosen and the resolutions adopted will be found elsewhere in this number of the *Journal*.

The second meeting was that of the Education Section held in conjunction with the National Education Association Convention in Boston, July 2–8. This was attended by some three hundred people and a large number of the interesting papers presented on the subject of domestic art will be found in this number of the *Journal*. Others will appear later.

Elsewhere in the current number will be found a report of the session of the Graduate School of Home Economics which met at Ames, Iowa, July 6–20.

The Annual Meeting. It now seems probable that the annual meeting of the American Home Economics Association will be held during the Christmas vacation at St. Louis, Mo., in conjunction with the American Economic Association. The full program will appear in the December number of the *Journal*.

December Number Free. All those who join the Association before January next will receive free the December number containing the full program of the annual or midwinter meeting

NEWS FROM INSTITUTIONS.

Santa Barbara State Normal School of Manual Arts and Home Economics.

Some idea of the meaning of the title of the new normal training school, established by the California legislature in the spring of 1909, can be gleaned from the perusal of the first section of the bill which provides that: "There is hereby established in the city of Santa Barbara, county of Santa Barbara, a state school to be known as the Santa Barbara State Normal School of Manual Arts and Home Economics. The purpose of this school is to furnish to the people of both sexes such professional training in manual arts and Home Economics as shall fit them to teach in the public schools of this state in the departments of manual arts and Home Economics. This act shall be liberally construed to the end that the school established hereby may at all times contribute to the high standard of professional training in the state."

This school, the first of its kind in the United States, was formally organized on July 10, 1909, by Governor J. N. Gillett, State Superintendent of Schools Edward Hyatt, and the board of trustees, five in number, from the state at large. Santa Barbara was granted this school "that the state might show appreciation of the late Miss Anna S. C. Blake, who established in this city in 1891 the first domestic science and mauual training classes on the Pacific Coast.

A beautiful site had been given by public-spirited citizens, and August 30 named as the date for opening the school in the Anna S. C. Blake Memorial Building, generously appropriated to the state's use by the Santa Barbara board of education. It was decided to establish the two departments which should meet the most insistent demand for teachers—manual arts, and domestic arts and domestic science, for primary and grammar grades. The city further permits the use of its splendid equipment and admits of all the practice teaching in its long established. well conducted classes in the above mentioned subjects. Only the simplest advance notices were possible and yet an astonishing number of inquiries were received, showing that the general public, as well as the progressive teacher is awake to the demand for the trained instructor in manual training and domestic science.

There being only the one special school in the state it will eventually present all the kindred subjects grouped under its comprehensive title and its students will, in a sense, be post-graduates, since entrance credits are based on the following general requirements: Graduation from a college, university, normal or special school; certificate of attendance for two or more years in such schools, with recommendations from the same; or successful teaching experience, with satisfactory testimonials. Elementary chemistry and the sciences included in the high school course of study are prerequisites for the Home Economics course.

The directors of long established institutions gladly welcome a new training school that is not lowering the standards they have worked so long and earnently to establish. The course of study here is full and the plan of work is thorough, practical and calculated to meet individual needs.

A year hence will see the beginning of the erection of the permanent school building and the structure will be an exemplification of what the school is to stand for—proportion, simplicity, fitness. Standing on the ridge of the hills surrounding the city, silhouetted against the highest peaks of the Santa Ynez Range, overlooking the city and the broad blue Pacific Ocean beyond, the building will have a location even more commanding than the old Franciscan Mission famous in Santa Barbara's early history.

Two stories in front for offices, assembly, and library; one story on the other three sides; built around a court with all the rooms opening into the sunshine and all so placed as to have the right exposure for light, attendance therein will be a pleasure. The equipment will grow gradually of course, meeting the needs of the state as its work increases. The school year, divided into quarters, will bring people from all sections and the mingling of interests will be of incalculable value.

Student graduates of normal schools, colleges and universities will come into the Home Economics department here for their year or more of training in methods for grades and for high school. The Santa Barbara student will often spend summer vacations at the universities, getting more and more insight into the sciences and a larger conception of the economics of living.

Here may come the men and women who will teach manual arts in the grades—it may be clay modeling, pottery, bench work, metal work, wood carving, with the accompanying knowledge of design or sewing, dressmaking, millinery, textiles, etc.—all will find the instruction needed. Supervisors of primary handwork and teachers of design studying here may know the relative value of their work, in comparison with the high school shop-work and the trade-school practice.

The duration of courses will naturally vary, but the school will exact of its applicants standards, fitness, good health and ability to carry the chosen line of work. The state needs good teachers and rather than place in each of its five established normal schools a department of special training it is wisely concentrating its forces, equipment and faculty, under one administrative head.

The personnel of the classes this first year is delightful. There are no "specials." All met the entrance requirements and all are meeting the standards. They come from Hawaii, Washington, Illinois, Montana, Arkansas, Colorado, Oklahoma, Iowa, Michigan, New York, and from more than a dozen cities in California. Most of them want to remain in California and there is a promising outlook for them all.—EDNAH A. RICH, *President.*

Bradley Polytechnic Institute, Peoria, Illinois.

Bradley Institute offers two courses in domestic economy. One is a part of the regular high school course, every girl being required to take both sewing and cooking. The other is a two-year course for those wishing to specialize in the branches relating to homemaking, either for their own use or for the purpose of teaching domestic economy, and for entrance to which a four year high school course or its equivalent is required.

In this course opportunity for strong science work is provided, and electives in other departments of the college are open to those desiring such work. A close connection with the manual arts department is maintained in various ways, notably in the design applied in art needlework and other modes of interior decoration, and in a course known as house construction, sanitation and decoration, in

which this year the construction was given by the head of the manual arts department, the sanitation by the head of the domestic science department and the decoration by one of the art teachers. Sufficient training is given in mechanical drawing and in perspective to enable the students to make very creditable drawings of floor-plans and elevations, and an interior view of one of the rooms is done in color by each student to indicate furnishing and decoration. The houses thus planned are made the basis for the study of cost of living in the course in household administration which follows.

The students are much interested this spring in a practical problem in house furnishing, made possible by the decision of the trustees of the institute to give the department the use of a cottage situated just to the rear. In this will be carried on next year the practice work in the various household processes such as cleaning, laundering and the serving of meals, and housekeeping will be studied under the conditions of the ordinary home. This will supplement the work done in the laboratory and class rooms of the institute and will give additional opportunity for practice and experimental work.

The furnishing of a laundry, kitchen, dining room, bed room, and living room in an attractive and suitable way for a moderate expenditure is the problem upon which the students are enthusiastically at work

In the domestic art department, courses in millinery and embroidery have been added this year. In connection with the former a very good exhibit of spring hats was held. It is expected that many evidences of results in art needlework will be visible in the new cottage.

The teaching staff of the department is as follows: Helen Marion Day, B.S., Assistant Professor in Domestic Science; Elida Esther Winchip, Instructor in Domestic Economy; Martha Shopbell, B.S., Instructor in Domestic Economy; Bertha May Scullin, A.B., Instructor in Domestic Economy; and Alice Evans Blair, Assistant in Sewing.

Colorado Agricultural College.

Miss Mary F. Rausch, head of the Department of Home Economics, recently writes as follows:

"U. S. Senator Guggenheim has given $45,000 for a new Home Economics building. The corner stone was recently laid, and we hope to get into the building by October. The program included a talk by Governor Shafroth and an address by Mrs. Sarah Platt Decker.

"Miss Inga Allison, who was formerly at Lake Erie College, and who has been with me for the past two years, has resigned. She has taken up a claim and will spend the next year in developing the house and land. Miss Maud Propst, of Rockford College, has been appointed as instructor in this department for next year.

"This has been a very satisfactory year. We doubled our attendance. We hope next year to have a large enrollment of girls. The school of agriculture, which was put in here for the first time this winter was a decided success, having had 200 students enrolled.

"We have started a new move here for this summer. The college is sending out members of the faculty to the various teachers' institutes to show the teachers how to teach agriculture, nature study and domestic science in the rural schools

and lower grades with very little money or equipment. We think it is a step in the right direction. As soon as people know more about domestic science, they will know that it must be put into every school in the country."

Eureka College.

The opening of a new department of domestic science is something like the "hanging of the crane," since it aims to be a center of harmony, order and thrift. Such a department was opened in Eureka College, Eureka, Illinois, last year, in charge of Mrs. Evaline C. Compton. Great interest was shown by the students, and considerable correlation with the work of other departments was accomplished. Further extension of the domestic science work is contemplated during 1910–11.

University of Idaho.

The department of domestic economy will begin the year of 1910–11 on a revised and considerably enlarged plan of work. The course is placed on a more logical basis, and several subjects, new both to domestic art and domestic science have been added, thus offering a very complete list to the young women of this yet new state, a good number of whom are already enrolled. Registration at the present time numbers 75 against 50 of last year. A growing interest is manifested in the department work both among the students and the people outside.

The course covers 136 credits and requires four years. For the first two years in addition to 56 credits for science, language, history and other cultural subjects, 4 credits are allowed for drawing, both form study and color and design, 2 credits for hand sewing, and 2 credits for machine sewing in the first year, and 4 credits for cookery, 4 credits for food lectures, and 2 credits for advanced sewing the second year. The last two years offer the following:

JUNIOR YEAR.

First semester:	Credits	*Second semester:*	Credits
Psychology	3	School administration	2
Bacteriology	5	Zoölogy or botany	4
Physiology	2	Bacteriology	3
Junior cookery	2	Hygiene	2
Dressmaking	2	Junior cookery	2
Household art	1	Tailor work	2
Textiles	1	House sanitation	1
Household law	1	Fine hand sewing	2
Laundering	1		

SENIOR YEAR.

First semester:	Credits	*Second semester:*	Credits
Vertebrate histology	2	Vertebrate histology	2
History of education	3	Education (elective)	2
Art needlework	2	Art needlework	2
Invalid cookery	1	Millinery	2
Emergencies and home nursing	1	Senior cookery	2
Practice teaching in sewing	2	Electives	3
Practice teaching in cookery	2		

Thus far only two students have been graduated from the course, with the degree B.S. The incoming classes promise, however, a fine increase of graduates in the immediate future.

Like all new universities, the work is being carried on under the hampering conditions of a state still in the making, but with the seemingly unlimited resources of the western country success is assured in a shorter time than would be possible in an up-to-date eastern university. The prospects ahead, therefore, seem encouraging in the extreme.—JENNIE L. K. HANER.

Illinois Wesleyan University.

The department of Home Economics has entered into a relation of exchange with the Brokaw Hospital, Bloomington, Illinois, by virtue of which the nurses in the hospital training school receive instruction in cookery for the sick from the department of Home Economics, while the students of this department receive instruction from the nurses in bandaging, bedmaking, the care of the sick room, and what to do until the doctor comes. Miss Ina K. Pitner (Teachers College, 1908), who is in charge of the work, says that quite in opposition to orthodox commercial principles, there is an ardent rivalry between the college and the hospital as to which shall give the more to the other.

A two-year course leading to a certificate, and a four-year college course leading to the degree of Bachelor of Science in household economy, is offered in this department of the university.

Illinois Woman's College.

From the Illinois Woman's College, Jacksonville, Illinois, comes the following report from Miss Grace M. Viall (University of Chicago, 1906):

"This fall we realized that we did not have as pretty a set of dishes as we desired for our senior dinners, so the junior class in cookery came to the rescue and gave two sales. With the proceeds we purchased and presented to the senior class, a beautiful set of Haviland china.

"Perhaps you will be interested in our sales. The first one was a pancake and waffle sale.. Each student had either a pancake griddle or a waffle-iron, and a bowl of batter. The orders came so rapidly that every student was kept at her post for two hours. We served one waffle for ten cents and three cakes for the same price. For five cents extra we gave a cup of coffee. Our second sale was a doughnut and coffee sale. The girls made five hundred doughnuts which disappeared within one hour after being placed on sale. Our sales are well patronized and are very popular with every one.

"I have found that the sales are valuable from three stand-points: first, they give the students practice in handling materials in large quantities; second, they afford opportunity for students to exercise executive ability; third, they create enthusiasm in the work, as the girls are anxious to produce results which are a credit to the department. We are planning more sales for the future. Among them are to be salad and strawberry short-cake sales. We will combine our lessons in frozen desserts with sales. We are going to collect freezers from our friends in town and each girl will have the practice of making and freezing large amounts of creams, ices and sherbets. After the lesson the creams will be sold."

James Millikin University, Decatur, Illinois.

Miss Bertha Miller, a 1908 graduate of Teachers College, has inaugurated a series of "faculty luncheons," served at a cost of from eight to ten cents per person by the students of the department of domestic economy to the members of the faculty. "Luncheon day" comes once a week, and the number of guests is limited to thirty. At first, Miss Miller says, it was difficult to secure so many, but now they have a waiting list, and the meals are highly praised and enjoyed.

Miss Miller has also organized a Home Economics club, open to students of domestic art and domestic science. Through this club several lecturers have been brought to the college to speak on various problems of home administration.

Kansas State Agricultural College.

The *Iowa Homestead* for July 7 gives an interesting illustrated account of the movable schools of Home Economics sent out by the extension department, under the direction of Miss Frances Brown and Miss Ula Dow. Each school continued for one week in a locality, the equipment and supplies being furnished by the local community, usually through the farmers' institute organization. An advance enrollment of not less than fourteen or more than twenty-four, all at least fifteen years of age, is required, and generally a membership fee of one dollar is charged.

Cooking lessons are given each morning and sewing lessons each afternoon. There are also conferences at 4 p. m. daily, open to the housewives of the community. These are very largely attended, sometimes as many as 200 being present.

The results of the school work are regarded as very encouraging. Over 400 people were enrolled at the fourteen schools held during the spring. Most of them were women, though there were many young girls, and the ages ranged from fifteen to sixty-five.

Lake Erie College.

In a recent letter, Miss Rachel H. Colwell writes as follows:

"My problem here is concerned with offering courses in household science in the department, which ranks with the other science departments in the college. There is no attempt made to offer professional courses, or especially to train teachers, any more than is done in physics or chemistry. The aim is eventually to have the courses open to Juniors and Seniors who will elect the work as the rounding out of the pure science courses.

"It is felt that this is the only way that the courses can receive academic credit in a girls' college, leaving a different treatment of the subject for the university and the agricultural college."

Lewis Institute, Chicago, Illinois.

Miss Mabel Wellman writes as follows:

"One course in which I am particularly interested is the one on economics of the house. The object is to set the students thinking along a good many lines. We begin with a study of the evolution of the house and family life. Starting with the most primitive types, the tree dwellers, we picture their probable every day life, in caves and huts. Primitive implements and industries are dwelt

upon, and a visit to the Field Columbian Museum with its many models of savages of different kinds employed in all sorts of occupations gives reality to the picture. Lake dwellings, cliff buildings, and pueblos are studied, and specimens of early implements and utensils examined. Next we study the probable influence which the following of ancestor worship had on the organization of the family and how it helped fix the position of women in the Aryan race. Then we study family life of the classic period in Athens, Sparta, and Rome, in a good deal of detail, contrasting with it early Semitic life as shown in the Old Testament. We trace the effect which early Christianity had upon the position of women, then the influence of feudalism, and the rise of chivalry. We stop for a study of home life in England in the Middle Ages, comparing it with civilization as we had found it in Rome. Then we study the different great periods of industry as they arose in England. For modern problems we read such works as Veblin's *Theory of the Leisure Class*, Stetson-Gilman's *Women and Economics*, and *The Home*, Richardson's *The Woman who Spends*, and enough political economy to take up questions in regard to private property ownership, and competition versus socialism. Along with this has come debates on woman suffrage, on the relation of woman to industry, and on the organization of modern homes including the servant problem. The last part of the course is devoted to the study of the cost of living, as portrayed in family budgets, and the division of the family income."

Massachusetts Agricultural College.

At the Summer School of Agriculture and Country Life, held July 11 to August 12, an innovation was the introduction of Home Economics courses. Three courses were offered, a four-week course in domestic science for rural school teachers, a four-week course of a more general nature in domestic science and Home Economics, and a two-week course in household science, given especially for the wives of clergymen attending the summer school. In each case three lectures and two demonstrations were given weekly. The work was in charge of Miss Harriet B. Rinaker of the University of Illinois, assisted by Miss Howe. All of the courses were largely attended, and much interest was evident in the offering of this work by the institution.

Middlebury College.

At the second summer session, held from July 5 to August 12, courses in practical cooking and home management were offered under the direction of Miss Caroline E. Alden. Other courses of special interest to Home Economics students were those in metal craft and elements of pottery and modelling and in rural sociology.

University of Missouri.

Miss Edna D. Day, for several years in charge of the Department of Home Economics, has accepted the professorship of Home Economics at the University of Kansas. Miss Louise Stanley, who was for two years an instructor in the Department of Home Economics, and who has been away on leave of absence the past year completing her work for the degree of Ph.D. at Yale University, is to be in charge of the department next year.

North Dakota Agricultural College.

The four-year course in Home Economics leading to the degree of B.S. organized last fall has been heartily received by the young women of the college. There has previously been a two-year course of high school grade, initiated when the college was founded twenty years ago. At present three courses are available, the college course, the high school course, and the homemakers' course. Last term 239 girls were enrolled in these three courses.

The college course is preceded and accompanied by a very thorough course in chemistry, physics, bacteriology and other allied sciences. While it was originally the intention to train for homemaking only, there have been so many requests for teachers for first class high schools that it has been necessary to include training for Home Economics teachers. These girls may elect subjects in the department of education.

The high school course is a preparatory course and on its completion the girls may enter the freshman year of the college.

The homemakers course is intended to meet the needs of our agricultural population. Labor is scarce and work so congested during the spring and fall months that it is impossible for many of the children of the best citizens of the state to enter at the beginning of the regular school year. Therefore, in order to make possible the attendance of these girls, whose parents are willing and anxious to give them educational advantages, a course has been established beginning the latter part of October and continuing five months for three years. The work is practical and includes sufficient chemistry, biology and other allied subjects to make the work in Home Economics effective. The department employs five regular teachers, one of whom is a graduate nurse who gives instruction in home nursing and hygiene for women.

Ceres Hall, the new women's building is to be occupied this fall. It has a frontage of 165 feet and is four stories high. This building is strictly modern, and contains three large kitchen laboratories, three sewing rooms, a laundry class room, a lecture room equipped with stereopticon, demonstrating table, etc. There is also a model kitchen, pantry and dining room where practical instruction will be given in planning, marketing, and preparing and serving family meals. One room is to be fitted up for instruction in home nursing. Because of the rigid winters the board of regents has made Ceres Hall sufficiently large for both the dormitory and Home Economics department. In connection with the dormitory is a dining room with seating capacity for four hundred. This gives an exceptional opportunity for the study of institutional housekeeping.

The Home Economics department has begun coöperating with the college extension work this year. The head of the department has lectured at a number of the high schools of the state. A car was also fitted up in the agricultural exhibit train which was sent out in June by the Northern Pacific Railroad under the auspices of the farmers' institute. This was the first attempt at introducing the movable school. It included a large exhibit of cooking and sewing and devices for making housekeeping and homemaking on the farm less irksome. Lectures were given in three towns each day, and the venture proved very successful.—JESSIE M. HOOVER.

This institution has recently been established at Cheltenham, Pa., with Miss Jane B. Haines as principal.

Pennsylvania School of Horticulture for Women.

The school grounds already contain an apple orchard and a vineyard, and it is planned to have the students assist in laying out other gardens and orchards. It is also planned to erect greenhouses at an early date. For the present, accommodations are available for not more than ten students.

A two-year course, continuing with brief intermissions throughout the entire calendar year has been arranged. The chief studies are horticulture, botany, chemistry, marketing of produce, agricultural bookkeeping and correspondence, garden carpentry and greenhouse construction, preserving of fruits and vegetables, bee keeping, poultry raising and elements of surveying and garden design. A high school education is a pre-requisite for admission and certificates are given upon the satisfactory completion of the course.

A course in Home Economics was included in the curriculum of the recent summer school, three hours a day being given to lectures on foods, sanitation and household management.

Rhode Island College.

The present school year opens with a large enrollment. Domestic art has been added to the course, one year being required and the second which includes textiles and tailoring being elective. Much new apparatus has been installed, and the facilities for work have been increased by the equipment of a suite of rooms including office, sewing room and lecture room.

Cookery demonstrations and social service are combined for the Rockford College students, Rockford, Illinois, in a scheme planned for them by the department of Home Economics in conjunction with the city Y. W. C. A. At the noon hour in the factories the students take turns in giving chafing dish demonstrations of cookery to the factory girls in different shops. The management very kindly coöperates in providing a room, a demonstration table, and other facilities, and the girls are all given a copy of the recipe and a taste of the dish. In the department of economics in the college at the same time the Home Economics students are studying labor conditions, factory systems, etc., and are doing field work in the very factories where they demonstrate.

Rockford College.

One of the leading schools of Home Economics in Utah is located at the agricultural college. In order to meet the needs of the state it has been necessary for the present to combine high school and college work at this institution. High schools are being erected rapidly in Utah towns, however, and work in domestic science is generally being included in the curriculum.

Agricultural College of Utah.

In 1909 the legislature appropriated a large sum of money for the remodeling of the college dormitory and this entire building was given over to education for the young women. In the renovation neither effort nor money was spared and the old "beanery" as it was then called by the college youths was transformed, under the

able direction of Miss Ellen A. Huntington, into the finest building with modern equipment for the purpose in the west.

The building itself is a large white brick four-story and basement structure, and it stands on the brow of the hill overlooking the picturesque little town of Logan. The walls are finished with sand plaster and tinted in soft colors, mostly tans and browns. Oregon fir, stained a dark brown, has been used throughout in the wood work.

The work of the Home Economics department is subdivided into the domestic science and domestic arts departments, and a further division is made for the high school and college students.

In two large kitchens the girls are given practice in cooking with gas, electricity and coal. These laboratories also offer a basis for discussion of the cost of equipment as one is more expensively equipped than the other, having electrical apparatus and carrara glass table tops and blue enameled ware, while the other has gas, wood table tops and grey enameled ware. The same work is given in each. Frequently the governor and trustees visit this institution; and on such occasions the Home Economics department serves lunch.

Opening off this kitchen is a large dining room finished in hardwood with oak furnishings especially designed and constructed by the mechanic arts department of the college. These are hand carved, the sego lily (the state flower) being used in the design. Two chemical laboratories afford opportunity for work in the chemistry of foods, textiles, and research. One laboratory is devoted to experimental work entirely; this is equipped with electricity and gas in such a way that new devices may be tested from a practical and economical standpoint.

The domestic arts department is provided with plenty of light airy rooms for its work. A large sewing room and a dressmaking room are furnished with tables and chairs and with machines of various makes. There is also a millinery room where the high school girls get training in this phase of the work. Besides these rooms there are offices on each floor, a library furnished with carved furniture designed and constructed by the mechanic arts department, a rest room, class rooms, room for museum material, laundry and locker rooms.

The health of the girls has been an important consideration. An electric elevator has been put at their disposal, and baths and showers afford great pleasure to the girls after special gymnasium work.

With a building so thoroughly equipped and a location so ideal, the courses have been arranged, not only to meet the needs of the students but also to maintain the highest college standard. The four years' college course leads to a degree of B.S. The high school courses offer work in sanitation, cooking, sewing, home nursing and millinery. The college work takes up food from the manufacturing, chemical, and economic standpoint. A course in nutrition and dietetics is also given. The fine arts department and the domestic arts department work together in giving a course in household art. Courses in dressmaking, and textiles where girls test the manufactured materials for adulteration and study the economic problems involved in the purchase of textiles, are offered in the junior and senior years. A course in household administration which deals briefly with the relations of the home to society, the cost of living, civic improvement, domestic service, household management, and modern tendencies in living, makes a fitting conclusion to the four years' college work. A teachers' course designed for students who expect to teach is also given.

The enthusiasm of the girls is made manifest by the work done by the Home Economics Club of the College, organized by the girls. At Christmas time a sale of Christmas cards attracted a great deal of attention as did an art exhibit of Japanese prints later on in the year.

In January a housekeepers' conference brought many women from different parts of the state. Laboratory work was offered in sewing and cooking and lectures were also given by many prominent men and women of the state. In connection with this work a "fly exhibit" was the occasion for much comment.

The agricultural college has done much toward the growth of the resources of the state through the college extension work. Almost all the small towns of the state have been reached by the extension method. Home Economics clubs have been organized in nine different localities. They are all doing splendid work and are very much interested. Regular outlines for the work are printed and sent out by the department. Recipes for the food demonstrations are given away. A great deal of interest has been taken by the ladies in a bread contest that was held in each place the extension workers visited. In seven cases out of nine the bread judged for the best was made in a bread mixer.

For Utah Home Economics means much for the individual and for society, both at present and in the future.

We graduated ten girls this year, all of whom have positions in Utah, Arizona and Idaho. Miss Mary Parmelee, who has been substituting head of the department of domestic arts for this year, is to be in Los Angeles next year. One of the domestic science staff, Miss Lizzie O. McKay, is to become head of the department at the Weber Stake Academy at Ogden, Utah. The rest of the staff at the college remains practically the same.—E. HAZEL LOVE, *Instructor in Domestic Science.*

Wellesley College. According to a recent number of the *Boston Transcript*, a new course is to be offered entitled Bacteria, Yeasts and Molds in the Home.

The following excerpts regarding the domestic science work of this institution are taken from a recent issue of the *Birmingham* (England) *Weekly Mercury:*

King's College for Women. "It is with a certain amount of diffidence that a fresh departure is made in the domain of women's work. So far, however, the authorities at King's College for Women have cause only for self-congratulation where their special courses in home science and household economics are concerned.

"From ten students during the first year, the college course is now followed by twenty, ten of whom are post-graduate students, while nearly half of these are university post-graduates. There is no fear now of lowering the standard of academic learning by using the knowledge gained in domestic science, and the presence of ex-Newnham and Girton students in the roll of post-graduates is undoubtedly a fresh feather in the cap of those who have been striving so long to raise home arts to a university level.

"One of the best proofs of the success of the scheme has been the laurels won by the pupils. One of these, Miss G. H. Rawson, has just accepted the offer of a post in a northern secondary school to organize the new science branch, of which the

educational authorities are beginning to recognize the importance. Another ex-student has been offered the wardenship of the new home science institute in Brighton, while a successful graduate is now lecturer at one of the largest provincial high schools for girls. There is, in point of fact, far greater demand for the domestic university woman than can be supplied. High school mistresses require the very highest training nowadays on the part of assistant teachers before they consider them competent to coach the girls in science, many of whom are themselves preparing for university life. Ordinary practical knowledge of cooking and housewifery —excellent though they may be—does not exactly qualify a woman to undertake the planning of a school curriculum in Home Economics or in kitchen laboratory work any more than a knowledge of drugs enables a man to practise as a doctor, and the university student is trained to treat the whole subject from a comprehensive and highly scientific point of view.

"The university of domestic science is still too young to point to the eventual successes on the part of its ex-students which it is hoped will be theirs in the future. It is not only the polytechnic or the elementary school which requires to lay stress on the value of a knowledge of home science, on the part of future wives and mothers or future teachers—it matters little which. The modern secondary school for a higher class scholar is equally in need of domestic knowledge as a science, and the best training which can be got."

NOTES FROM THE FIELD.

Iowa Association of Home Economics.

This association, which was organized last November, held a meeting at the Iowa State Teachers College in Cedar Falls, from Friday afternoon, May 13, to Saturday noon. Five members of the Home Economics faculty of the Iowa State College of Agriculture and Mechanic Arts were present, besides a number of public school teachers and interested club-women.

The afternoon program gave a birds-eye view of what was being done in Iowa along the line of the household arts. Mrs. J. H. Woods, chairman of the Committee on Home Economics of the State Federation of Women's Clubs, told what the clubs were doing and what they hoped to do. Miss Neale Knowles, of the extension department of Iowa State College, gave a most helpful talk on the extension work in Home Economics conducted by that institution. A number of reports were also given on the status of the work in the public schools of the State.

Mrs. Alice Peloubet Norton, of the University of Chicago, was the guest of the association, reaching Cedar Falls in season for the dinner served at six o'clock by the young women of the Home Economics department of the college. In the evening she addressed an enthusiastic audience of about four hundred, mostly young women, on the topic, The Social Value of the Household Arts.

The morning session of the association also proved most helpful. Miss Nellie Nash, of Waterloo, gave a comprehensive outline of a high school course in Home Economics. Miss Lelia Purdy, of Iowa State College, gave helpful suggestions regarding the teaching of domestic arts in the grades and high schools, and the last half-hour of the morning was given to a question box, conducted by Miss Lulu Graves of the same institution. Many felt that more time should have been given to this part of the program.—MARY L. TOWNSEND.

Teaching Cooking in the Schools of Washington, D. C.

In the teaching of cooking there are, as is well known, three methods of presentation, namely, the demonstrative method, where the work is done by an expert before the class; the individual method, where each member of the class having certain materials and following written or verbal directions fashions the materials into some dish; and a method which combines these two ideas. This last is the method used in the elementary schools of Washington, D. C. The manual training high schools are, however, equipped for the individual work.

In the elementary schools the class is formed into one or more groups and to each group sufficient materials are given to make a dish which will serve an ordinary family. Certain members of each group (changing each lesson) fashion this material in the presence of the other members of the group, who are often called upon to criticise, give reasons for, or suggestions regarding, the manipulation, combination or other phases of the preparation of the materials, or to contribute some interesting bit of information concerning the materials being used.

The mental activity and the interest of each member of the group is maintained, for each member feels that, though she is not actually handling the material, the success of the dish depends on her close attention to the work to prevent those who are doing it from making mistakes. Then, too, the cooks, knowing they may, by carelessness or inattention, mar the success of the dish, which belongs as much to those who watch as to those who cook, take more pains to measure correctly, to follow directions exactly and to take every precaution to insure the production of a perfect dish. In this way good habits of workmanship are formed and they are trained to appreciate their dependence on one another and a community spirit is aroused.

As the number in each class is kept below twenty each member has frequent opportunity to do the actual work and to do it as she will have to do it for a family. Moreover, as each member writes out in her own words the directions for whatever she has done or has seen done she must have a clear mental picture of every step, and this picture is made clearer by her effort to put it into words.—EMMA S. JACOBS, Director of Domestic Science.

Itinerant Instruction in Domestic Economy in Ireland.

The April number of the *Journal of the Department of Agriculture and Technical Instruction for Ireland* contains an article dealing with the administration and organization of itinerant instruction in domestic economy in Ireland, and giving a description of a course recently held at the village of Clonaslee. The instruction included 20 lessons in cooking and 10 lessons in home sewing and dressmaking. Simple household accounts and the Post-Office Savings Bank were dealt with, and five-minute lectures were given on such subjects as cleanliness in dairies, the cultivation of vegetables, etc. The cooking class was held from 4 to 6 p.m., and had an average attendance of 15, and the sewing class from 3 to 5 p.m., with an average attendance of 9. The ages of students varied from 14 to 30 years, the average being 20 years.

Vocational Education.

"There is no greater blessing in this world than a steady job, with increasing efficiency and hence increasing wages as time goes on; and the only way to insure that happy state for each individual is to give him the training for some skilled vocation in life, whether it be in business, in trade, or in a profession.

"We are the only progressive nation which allows its adolescents, the great majority of them, to drift without systematic educational influence from the time they are fourteen years of age until they arrive at the threshold of citizenship, the age during which the child becomes a youth and man, the age during which the plasticity of early childhood gives place to stability, the age during which the influences to which he is subjected are likely to be permanent. We are allowing the great majority of our youth to go to waste during this period because we are not providing for them some means of deepening and intensifying their general education, and at the same time we are not giving them a vocational education that shall equip them well to do what the world expects them to do, and which means for them a career—a chance." Professor Hanus, Chairman of the Massachusetts Commission on Industrial Education.

BOOKS AND LITERATURE.

The Education of Women. Marion Talbot. University of Chicago Press, Pp. 255. $1.25. 1910.

If the author had said, as she truthfully might have done, "all of which I saw and a large part of which I was," the reader would have appreciated more fully the sanity of view and the restrained enthusiasm with which the subject of the academic education of women is treated in the volume.

The growth of that ideal of the material to be used in the process is admirably presented as well as the changes in environment and in needs. The somewhat tardy awakening of the colleges to what has already taken place is very cleverly suggested and might have been carried still farther, but the author is for the most part loyal to academic tradition. The glimpses of past and present curricula in contrast, the bright illustrations of point of view make the book one which no college woman and no teacher of girls can afford to be without.

The Making of a Trade School. Mary Schenck Woolman. Whitcomb & Barrows. 1910. Pp. 101. 50 cts.

For the one per cent of women who go to college thirty per cent have to earn bread and butter for themselves and those dependent upon them. The lot of the widow with children to be supported is so immeasurably brighter in this century that it is somewhat strange that no novel writer has used it as the basis of a plot. Instead of being obliged to scatter her children or to starve over long hand-sewed seams, as her only resource, there are 300 kinds of work open to her with fair remuneration if her hands have been trained in her youth at a time when muscles acquire with rapidity and never forget. It is the vicissitudes of a possible future that really makes the trade school for girls an insurance against a struggling middle age. It does no harm to the girl to have skill to fall back upon, and it may be the saving of herself and her family. Even if the girl does not enter or stay in the industry a certainty of being able to do one thing well adds to stability of character. This treatise, by the organizer and director of the first experiment of its kind in the United States, gives not only the history and spirit in which the work should be done, but the details of equipment and of financial support. The social side is perhaps the most significant as showing the need of special care for the health of the working girl and the opportunity for aid in this direction.

The Revised Syllabus for Elementary and Secondary Schools. Published by the Board of Regents of the State of New York.

Household Arts appears in this syllabus for the first time as an academic subject. There is a brief outline for both domestic science and domestic art in the elementary school. The secondary syllabus in household arts will contain an

outline on clothing, one on foods, and one on household sanitation and management, including the sanitation of the house, laundering, and home care of the sick. Copies of the syllabus may be obtained on application to the New York State Education Department, State Capitol, Albany, New York.

Free Publications of the Department of Agriculture Classified for the Use of Teachers. Dick J. Crosby and F. W. Howe, U. S. Dept. Agriculture, Office of Experiment Stations, Circ. 94, pp. 29.

This circular presents a selected list of the free publications of the U. S. Department of Agriculture, classified for the use of teachers of agriculture, botany, chemistry, domestic science and hygiene, geography, physics, physiology, and zoölogy, including entomology. The publications mentioned in this list have been selected with special reference to their suitability to supplement college and school text books in the subjects mentioned. The list will aid teachers in making a more discriminating selection and use of the department publications.

About 70 publications are listed as adapted to teaching domestic science and hygiene.

The National Congress of Mothers Magazine. Published monthly, except during July and August, by the National Congress of Mothers, 147 North Tenth Street, Philadelphia, Pa. 50 cents a year; 10 cents a number.

This magazine contains articles which should be of interest to workers in Home Economics, especially those who are concerned with problems regarding the care of children. A recent number contains, among other items, articles on School Fatigue, by Helen C. Putnam, M.D.; G. Stanley Hall and the Higher Education of Women, by L. Pearl Boggs; The Mind of the Child, by Dunstan Brewer, an article taken from the *Parents Review*, an English publication of similar purpose, and one, by the way, of distinct value; and The Sunday-School, by Ednah C. Silver. In addition, the magazine contains state news and other items of information.—B. R. A.

Frauenwirtschaft, Zeitschrift für das hauswirtschaftliche und gewerbliche Frauenwirken. [Woman's Work—A Journal for Housekeepers and Trade Workers.] Paderborn. W. Liese, editor. Monthly publication, price 3 marks. 60 pp. a year. Rev. in *Soz. Praxis*, 19 (1910), No. 34, p. 942.

This journal is devoted to the special interests of women engaged in home work and in trades.

Laboratory Notes in Household Chemistry for the use of Students in Domestic Science. Hermann T. Vulté and George A. Goodell. Easton, Pa. The Chemical Publishing Co., 1910 (second edition), pp. 189. $1.25.

There has been much objection to "hashed food" in the mental training, especially in science, but those who have tried to teach "correct form" chemistry to girls and particularly young women will agree that interest in substances with

which they have already had some contact is a great help in leading them to plod over the dry places for which they can see no possible use.

This little book begins with that most universal agent, the household fuel, and passes on to the functions of the atmosphere of water and of the metals and utensils of the common every-day living. There are eight chapters on food materials.

The laboratory experiments are so simple that any high school laboratory should furnish the equipment and any teacher of chemistry should be able to make the work interesting. The general tone of the book is good and scientific, and the references to standard works are frequent, so that it is difficult to suppose a student leaving the laboratory with the satisfied opinion that science that has been brought into the comprehension of the unscientific is all-sufficient. He will rather have a desire for more knowledge. The performance of accurate experiments and drawing of careful conclusions is an education in itself for many of the teachers who come to the work of fitting for domestic science rather late in youth and from an unscientific environment.

How to Choose and Cook the Cheaper Cuts of Beef. Anna Barrows. *Harper's Weekly*, 54 (1910), No. 2774, pp. 13, 14, figs. 4.

The selection and preparation of meat and related questions are discussed with special reference to economy in the use of this class of food materials, and attention is directed especially to the fundamental principles of meat cookery. The article as a whole is an interesting and valuable contribution to the subject, summarizing, as it does, the information which the author has gathered as a result of unusually wide experience from the teacher's standpoint as well as that of the laboratory and the home.

Composition of Figs. R. Paladino. *Biochem. Ztschr.*, 24 (1019), No. 3–5, p. 265.

Fresh fig flesh, according to the analysis reported, contains 80 per cent water; 0.7 per cent nitrogenous material, 0.3 per cent fat, 16.2 per cent sugar, 1.30 per cent cellulose, 0.7 per cent ash, and 0.8 per cent gummy or mucilaginous material. The fig rind or skin contains 86 per cent water, no nitrogenous material, 0.1 per cent fat, 5.4 per cent sugar, 5.76 per cent cellulose, and 2.74 per cent gummy or mucilaginous material. Dried figs contain 57 per cent water, 4.1 per cent nitrogenous material, 2.2 per cent fat, 26.06 per cent sugar, 8 per cent cellulose, 0.18 per cent gummy or mucilaginous material, and 2.52 per cent ash.

An Outbreak of Poisoning by Arsenical Sweets. J. R. Hutchinson. *Pub. Health* [London], 23, (1910), No. 4, pp. 138–142.

Details are given of the examination by Délépine of samples of confectionery and confectionery ingredients in connection with a somewhat extended occurrence of arsenical poisoning in school children. The average amount of arsenic found in the candy was from 10 to 11 grains per pound. The investigation did not satisfactorily explain how arsenic came to be present, as the materials used in making such candies as were under consideration were not found to contain arsenic.

Important Points in Wrapping-Paper designed for Use in connection with Foodstuffs. H. Kuhl. *Pharm. Zentralhalle.* 50 (1909), No. 52, pp. 1079–1100; abs. in *Chem. Ztg.*, 34 (1910), No. 25, Repert., p. 101.

The author concludes that no paper is satisfactory for this purpose unless it is well calendered with gelatin or glue. Whether or not this is the case may be ascertained by putting a drop of iron chlorid solution on one surface, allowing it to remain for a short time, and then absorbing the surplus liquid with filter paper. A drop of tannic acid solution should be placed in the same position on the other surface of the paper. If the paper is badly calendered a black spot will be noticeable. Badly calendered paper readily absorbs moisture and forms an excellent medium for the growth of micro-organisms.

Left-over Foods and How to Use Them. Elizabeth O. Hiller Kendallville, Ind. McCray Refrigerator Co., 1910, pp. 32, pl. 1, figs. 15.

The marketing, selection, care of foods, and similar general matters are discussed and a considerable number of recipes are given for the use of left-over foods. Sections giving clear and concise directions for the care of the refrigerator constitute an important feature of the publication.

Feeding the School Children. Jeanette van Ruypen. *Cooking Club Mag.*, 12 (1910), No. 6, pp. 63, 64.

Information is summarized regarding the efforts which have been made in a number of cities to supply meals to needy school children, and the importance of such work is discussed.

Rate of Wages and Cost of Living in Yarmouth. A. J. Fleming. *Weekly Cons. and Trade Rpts.* U. S. 1 (1910), No. 3, p. 102.

Data regarding rates of wages, cost of food, and other necessities in Yarmouth, Nova Scotia, are summarized.

Wages and Cost of Living in Great Britain. H. Studniczka. *Weekly Cons. and Trade Rpts.* U. S. 1 (1910), No. 3, pp. 97–102.

Data regarding the prices of food, the average cost of living in workingmen's families, and similar information are summarized.

Quarterly and Yearly Averages of Prices of Provisions during the Year 1908. W. P. Chapman. *Diplo. and Cons. Rpts.* London. Ann. Ser., 1908, No. 4401, p. 32.

Data are summarized in tabular form regarding the prices of foodstuffs in Florence.

City Bakeries. C. Aronovici. *Survey*, 23 (1910), No. 15, pp. 497–499, figs. 4.

The author briefly reports the results of a study of the condition of bakeries in Providence, R. I. Of 106 bakeries examined, 4 were classified as very clean, 21

as clean, 40 as tolerably clean, 33 as filthy, and 8 as very filthy. "These figures show that only one-fifth of the shops could be classed as clean."

Night Work in Bakeries. F. Lösser. *Soz. Praxis*, 19 (1910), No. 31, pp. 818-820.

The author discusses the need for forbidding night labor in German bakeries, and points out what has been accomplished in other countries.

Regulating Night Work in Swiss Bakeries by Legislative Enactment E. Platzhoff, Jr. *Soz. Praxis*, 19 (1910), No. 31, pp. 820–823.

The need for limiting night work in bakeries is pointed out, and what has been accomplished in Switzerland discussed.

The Housing Conditions of Employees in Hotels in Hamburg. *Soz. Praxis*, 19 (1910), No. 24, pp. 940, 941.

A report of an extended study from a hygienic standpoint of the housing conditions of hotel employees, made under the provisions of local legislative enactments. Ventilation, light, air, and other similar factors were taken into account,

The Removal of Odors Through Ventilation. Kisskalt. *Arch. Hyg.*, 71 (1909), No. 4, pp. 380–386.

In a contribution from the Hygienic Institute of Berlin, Dr. Kisskalt reports that the various distinct odors clinging to prisons, institutions, schools, old dwellings, old clothes, etc., appear to be due to absorbed substances of unknown composition which emit these odors for many months or even years. Good ventilation banishes them temporarily but they return when the rooms are closed.

A test made with ammonia gas in a closed room proved that six weeks was not sufficient to remove the whole amount that had been absorbed. Moist materials, *e.g.*, clothing, utensils, etc., in a damp room, will absorb more of such odors than dry.

This investigation points to the value of smooth, non-absorbent surfaces and to the use of paint and varnish as renovators.

Cleaning and Renovating at Home. E. G. Osman. Chicago. McClurg. 1910, pp 193. 75 cts.

A considerable amount of data are summarized regarding cleaning materials, cleaning processes, etc., and directions are given for cleaning and renovating clothing and other materials. The work is designed as a household manual.

How Shall the Little Ones Sew? Florence Kendrick Johnson. The People's University Extension Society, 105 East 17th St., New York City. Pp. 32. Price 10 cts. (institutions and charitable classes, 5 cents, postpaid 6 cents).

This little book promises to be an excellent guide to those conducting sewing classes in settlements or church schools. It is an outgrowth of the work done under the Peoples University Extension Society and is the result of study and

investigation made in this particular field of sewing for children. It emphasizes especially the capabilities of young children and the dire results which come from overtaxing the nervous system or straining the eyesight by fine sewing. It is a simple, practical book with an illustrated course of study outlined for one year. The author also offers suggestions for other courses to follow, but wisely refrains from making the plans too definite. She rather advises that they should be the result of the needs and peculiar conditions of each class. The two systems of fine and coarse sewing for young children are contrasted and the fact demonstrated that the old-time fine sewing on scraps is detrimental to the health and interests of the young child. The book is an excellent beginning in an important line of work.—ANNA M. COOLEY, Teachers College.

House Decoration. Dorothy Tuke Priestman. Philadelphia. Pennsylvania Publishing Co., 1909, pp. 208. $1.00.

The treatment of walls, the selection of furniture and floor coverings, the kitchen, the bathroom, home carpentry, and other related topics are taken up in this volume, which as a whole is a useful handbook for the general reader.